

## MODEL (1)

First: Choose the correct answer:

- 1 Tan  $45^\circ = \dots$ 

A 1      B  $2\sqrt{2}$       C  $\frac{1}{2}$       D  $\sqrt{2}$
- 2 If  $\sin x = \frac{1}{2}$ , X is an acute angle, then  $m(\angle X) = \dots\dots\dots$ 

A 4      B 60      C 30      D 90
- 3 The distance between the two points (3, 0) , (0, -4) =  $\dots\dots\dots$ 

A 4      B 5      C 6      D 7
- 4 If  $X + Y = 5$  ,  $Kx + 2y = 0$  are perpendicular , than  $K = \dots\dots\dots$ 

A -2      B -1      C 1      D 2
- 5 If A (5, 7) , B ( 1, -1) , then the mid-point  $\overline{AB}$  is  $\dots\dots\dots$ 

A (2, 3)      B (3, 3)      C (3, 2)      D (3, 4)
- 6 The equation of the straight line which passes through the point (3, -5) and parallel to Y-axis is  $\dots\dots\dots$ 

A  $x = 3$       B  $y = -5$       C  $y = 2$       D  $x = -5$

Second:

- A Whithout using calculator prove that  $\sin 60^\circ = 2 \sin 30^\circ \cos 30^\circ$
- B Prove that the points A ( -3, -1) , B ( 6, 5) , C(3, 3) are collinear

**Third:**

**A** If  $4 \cos 60^\circ \sin 30^\circ = \tan x$ . Find the value of  $x$ , then  $x$  is an acute angle.

**B** If the mid-point of  $\overline{AB}$  is  $c(6, -4)$  then  $A(5, -3)$  Find the point  $B$ .

**Fourth:**

**A** If the straight line  $L_1$  passes through the points  $(3, 1)$ ,  $(2, K)$  and the straight line  $L_2$  makes with the positive direction of the  $x$ -axis an angle of measure  $45^\circ$ . Find the value of  $K$  if

$$L_1 \parallel L_2$$

**B**  $ABC$  is a right angled triangle at  $C$ ,  $AC = 6\text{cm}$ ,  $BC = 8\text{cm}$  find

**First:**  $\cos A \cos B - \sin A \sin B$ .

**Second:**  $m(\angle C)$ .

**Fifth:**

**A** Find the equation of the straight line which slope is 2 and passes through the point  $(1, 0)$ .

**B** Prove that the points  $A(3, -1)$ ,  $B(-4, 6)$ ,  $C(2, -2)$  which belong to an orthogonal cartesian co-ordinates plane lie on the circle whose centre  $M(-1, 2)$ . Find the circumference of the circle.

**Third:**

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## ANSWER MODEL (1)

### QUESTION (1)

$$(1) \tan(45^\circ) = 1$$

$$(2) m(\angle x) = 30^\circ$$

$$(3) \sqrt{(3-0)^2 + (0+4)^2} = \sqrt{25} = 5$$

$$(4) \text{Slope}_1 = \frac{-1}{1}, \text{Slope}_2 = \frac{-k}{2} \quad \because L_1 \perp L_2$$

$$\therefore S_1 \times S_2 = -1 \quad \therefore \frac{-1}{1} \times \frac{-k}{2} = -1 \quad \therefore k = -2$$

$$(5) \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = \left( \frac{5+1}{2}, \frac{7-1}{2} \right) = (3, 3)$$

$$(6) X = 3$$

### **QUESTION (2)**

$$(a) \sin (60^\circ) = \frac{\sqrt{3}}{2}$$

$$2 \sin (30^\circ) \cos (30^\circ) = 2 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

$$\therefore \sin (60^\circ) = 2 \sin (30^\circ) \cos (30^\circ)$$

$$(b) \text{Slope } \overleftrightarrow{AB} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 + 1}{6 + 3} = \frac{6}{9} = \frac{2}{3}$$

$$\text{Slope } \overleftrightarrow{BC} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 5}{3 - 6} = \frac{-2}{-3} = \frac{2}{3}$$

$$\therefore \text{Slope of } \overleftrightarrow{AB} = \text{Slope of } \overleftrightarrow{BC} \quad \therefore A, B, C \text{ are collinear}$$

### **QUESTION (3)**

$$(a) \tan (x) = 4 \cos (60^\circ) \sin (30^\circ)$$

$$= 4 \times \frac{1}{2} \times \frac{1}{2} = 1$$

$$\tan (x) = 1 \quad \therefore m(\angle x) = 45^\circ$$

$$(b) \text{Let } B = (x, y)$$

$$\frac{x + 5}{2} = 6 \Rightarrow x + 5 = 12 \quad \therefore x = 7$$

$$\frac{y - 3}{2} = 6 \Rightarrow y - 3 = -8 \quad \therefore y = -5$$

$$\therefore B (7, -5)$$



### QUESTION (4)

$$(a) S_1 = \frac{k-1}{2-3} = \frac{k-1}{-1} = -k + 1$$

$$S_2 = \tan(45^\circ) = 1$$

$$\therefore L_1 \parallel L_2 \Rightarrow S_1 = S_2 \Rightarrow -k + 1 = 1 \therefore k = \text{zero}$$

(b) ABC is a right-angled triangle at C

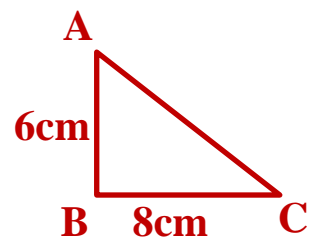
$$\therefore AB = \sqrt{(AC)^2 + (BC)^2} = \sqrt{36 + 64} = 10\text{cm}$$

$$(1) \cos A \cos B - \sin A \sin B$$

$$= \frac{6}{10} \times \frac{8}{10} - \frac{8}{10} \times \frac{6}{10} = \text{zero}$$

$$(2) \sin C = \frac{6}{10} = 0,6 \quad \text{shift } \sin 0,6 = ,,,$$

$$M(\angle C) = 36^\circ \quad 52^\circ \quad 11^\circ$$



### QUESTION (5)

$$(a) Y = m x + c = 2x + c \quad (4, 0) \in \text{the straight line}$$

$$\therefore 0 = 2 \times 1 + c \Rightarrow c = -2$$

The equation of straight line  $y = 2x - 2$

$$(B) MA = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(-1-3)^2 + (2+1)^2} = 5 \text{ l. u.}$$

$$MB = \sqrt{(-1+4)^2 + (2-6)^2} = \sqrt{9 + 16} = 5 \text{ l. u.}$$

$$MC = \sqrt{(-1-2)^2 + (2+2)^2} = \sqrt{9 + 16} = 5 \text{ l. u.}$$

$$\therefore MA = MB = MC = 5 \text{ L.U} \Rightarrow A, B, C \text{ lies on the circle}$$

$$\text{circumference of a circle} = 2 \pi r = 2 \pi \times 5 = 10\pi \text{ L.U}$$

## MODEL (2)

First: Choose the correct answer:

- 1  $2 \sin 30^\circ \tan 60^\circ = \dots\dots\dots$ :  
 A  $\sqrt{3}$                       B 3                      C  $\frac{\sqrt{3}}{3}$                       D  $\frac{1}{2}$
- 2 The equation of the straight line which passes through the point  $(-2, -3)$  and parallel to x-axis is .....  
 A  $x = -2$                       B  $x = -3$                       C  $y = -2$                       D  $y = -3$
- 3 If  $\cos x = \frac{\sqrt{3}}{2}$ ,  $x$  is acute angle, then  $\sin 2x = \dots$   
 A 1                      B  $\frac{\sqrt{3}}{2}$                       C -2                      D  $\frac{1}{\sqrt{3}}$
- 4 A circle of centre at the origin point and its radius is 2 unit length which of the following points belongs to the circle?  
 A  $(1, -2)$                       B  $(-2, \sqrt{5})$                       C  $(\sqrt{3}, 1)$                       D  $(0, 1)$
- 5 The perpendicular distance between the two straight lines  $x - 2 = 0$ ,  $x + 3 = 0$  equals .....  
 A 1                      B 5                      C 2                      D 3
- 6 If  $\frac{-3}{2}$ ,  $\frac{6}{k}$  are the slopes of two parallel straight lines then  $k = \dots$   
 A 6                      B -4                      C  $\frac{3}{2}$                       D 2

Second:

- A If  $\cos E \tan 30^\circ = \cos^2 45^\circ$  find  $m(\angle E)$ ,  $E$  is a cute angle
- B Show the type of the triangle whose vertices  $A(3, 3)$  m  $B(1, 5)$ ,  $C(1, 3)$  due to its side lengths.

Third:

- A Find the equation of straight line which passes through the points  $(1, 3)$  ,  $(-1, -3)$  and prove that it is passing through the origin point.
- B If the point  $(3, 1)$  is the mid-point of  $(1, y)$  ,  $(x, 3)$  find the point of  $(x, y)$ .

Fourth:

- A Find the equation of the straight line which intercepts two axes . Two positive parts of length 1 and 4 for x and y axes respectively and find its slope
- B ABC is a right - angled triangle at B  $AC = 10\text{cm}$   $BC = 8\text{cm}$  , prove that  $\sin^2 A + 1 = 2 \cos^2 C + \cos^2 A$

Fifth:

- A prove that the straight line which passes through the points  $(-1, 3)$  ,  $(2, 4)$  parallel to the straight line  $3y - x - 1 = 0$
- B ABCD is a trapezium ,  $\overline{AD} \parallel \overline{BC}$   $m(\angle B) = 90^\circ$  ,  $AB = 3\text{cm}$  ,  $BC = 6\text{cm}$  ,  $AD = 2\text{cm}$  . Find the length of  $\overline{DC}$  and the value of  $\cos \angle BCD$

## ANSWER MODEL (2)

### QUESTION (1)

$$(1) \quad 2 \times \frac{1}{2} \times \sqrt{3} = \sqrt{3}$$

$$(2) \quad y = -3$$

$$(3) \quad \cos(x) = \frac{\sqrt{3}}{2} \Rightarrow m(\angle x) = 30^\circ \therefore \sin(2x) = \sin 60 = \frac{\sqrt{3}}{2}$$

$$(4) \quad (\sqrt{3}, 1) \text{ because } \sqrt{(\sqrt{3})^2 + (1)^2} = 2$$

$$(5) \quad |2| + |-3| = 5 \text{ L.U}$$

$$(6) \quad L_1 \parallel L_2 \Rightarrow m_1 = m_2 \Rightarrow \frac{-3}{2} = \frac{6}{k} \therefore k = \frac{6 \times 2}{-3} = -4$$

### **QUESTION (2)**

$$(a) \cos (E) \times \frac{1}{\sqrt{3}} = \left( \frac{1}{\sqrt{2}} \right)^2 = \frac{1}{2}$$

$$\cos (E) = \frac{1}{2} \times \sqrt{3} = \frac{\sqrt{3}}{2}$$

$$\text{shift } \cos \left( \frac{\sqrt{3}}{2} \right) = ,,, \Rightarrow m(\angle E) = 30^\circ$$

$$(b) AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(1-3)^2 + (5-3)^2} = 2\sqrt{2}$$

$$BC = \sqrt{(1-1)^2 + (3-5)^2} = \sqrt{0+4} = 2 \text{ L.U}$$

$$AC = \sqrt{(1-3)^2 + (3-3)^2} = \sqrt{4+0} = 2 \text{ L.U}$$

$$\therefore AC = BC \Rightarrow \Delta ABC \text{ is isosceles triangle}$$

### **QUESTION (3)**

$$(a) \text{ Slope} = \frac{y_1 - y_2}{x_1 - x_2} = \frac{-3 - 3}{-1 - 1} = \frac{-6}{-2} = 3$$

$$Y = m x + c = 3x + c \quad (1, 3) \in \text{the straight line}$$

$$\therefore 3 = 3 \times 1 + c \Rightarrow c = 0$$

$$\text{The equation of straight line } y = 3x$$

$$0 = 3 \times 0 \text{ the straight line passing through the point } (0,0)$$

$$(b) (3, 1) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = \left( \frac{1+x}{2}, \frac{3+y}{2} \right)$$

$$3 = \frac{1+x}{2} \Rightarrow 1+x = 6 \quad \therefore x = 5$$

$$1 = \frac{3+y}{2} \Rightarrow 3+y = 2 \quad \therefore y = -1 \quad \therefore (x, y) = (5, -1)$$

### QUESTION (4)

$$(a) \quad \frac{x}{A} + \frac{y}{B} = c \Rightarrow \frac{x}{1} + \frac{y}{4} = c$$

$$\therefore \text{Slope} = \frac{B}{A} = \frac{4}{1} = 4, (1, 0) \in \text{the straight line}$$

$$\frac{1}{1} + \frac{4}{0} = c \Rightarrow c = 1$$

$$\text{The equation } x + \frac{y}{4} = 1 \Rightarrow 4x + y = 4$$

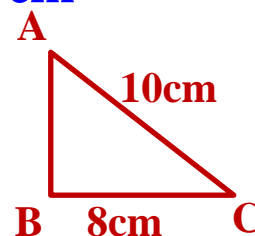
(b)  $\therefore \triangle ABC$  is a right angled triangle at B

$$\therefore AB = \sqrt{(AC)^2 - (BC)^2} = \sqrt{100 - 64} = 6 \text{ cm}$$

$$\sin^2 A + 1 = \frac{64}{100} + 1 = \frac{164}{100} \dots\dots (1)$$

$$2 \cos^2 C + \cos^2 A = 2 \times \frac{64}{100} + \frac{36}{100}$$

$$= \frac{128}{100} + \frac{36}{100} = \frac{164}{100} \dots\dots\dots (2)$$



From (1) & (2)  $\therefore \sin^2 A + 1 = 2 \cos^2 C + \cos^2 A$

### QUESTION (5)

$$(a) \therefore \text{Slope (1)} = \frac{4-3}{2+1} = \frac{1}{3}, \text{Slope (2)} = \frac{-(-1)}{3} = \frac{1}{3}$$

Slope (1) = Slope (2)  $\therefore$  the two straight lines are parallel

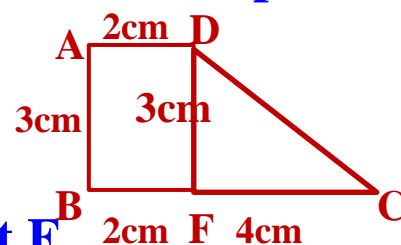
$$(b) AB = DF = 3\text{cm}, AD = BF = 2\text{cm}$$

$$FC = 6 - 2 = 4\text{cm}$$

$\therefore \triangle DFC$  is a right angled triangle at F

$$\therefore DC = \sqrt{(DF)^2 + (FC)^2} = \sqrt{9 + 16} = 5 \text{ cm}$$

$$\cos (\angle BCD) = \frac{FC}{DC} = \frac{4}{5}$$





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MODEL (3)

First: Put (✓) or (X):

( For the special needs )

- 1 The distance between the point (9,0), (4,0) = 5 (✓)
- 2 If  $\tan E = 1$ , then:  $m(\angle E) = 45^\circ$  (✓)
- 3 The straight line  $y = 2x + 1$  intercepts a part of length -1 for y - axis (X)
- 4 If  $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$ , then the slope of  $\overleftrightarrow{AB} \times$  The slope of  $\overleftrightarrow{CD} = 1$  (both of  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{CD}$  aren't parallel any axes) (X)
- 5  $\tan 60^\circ = \frac{1}{\sqrt{3}}$  (X)
- 6 If A (1, 2), B (3, 4), then the coordinates of the midpoint of  $\overline{AB}$  is (2, 3) (✓)

Second: Choose the correct answer form given:

- 1 The distance between the point (4,3) and x - axis is 3  
 A -3 B 3 C 4 D -4
- 2  $4 \cos 30^\circ \tan 60^\circ = 6$   
 A 3 B  $2\sqrt{3}$  C 6 D 12
- 3 If  $X + y = 5$ ,  $kx + 2y = 0$  are parallel, then  $k = -2$   
 A -2 B -1 C 1 D 2
- 4 The points (0, 1), (3, 0), (0, 4) .....  
 A from a right angled triangle B from a acute angled triangle  
 C from an obtuse angled triangle D are collinear
- 5 If  $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$  and the slope of  $\overleftrightarrow{AB} = \frac{2}{3}$ , then the slope of  $\overleftrightarrow{CD} = \frac{2}{3}$   
 A  $\frac{2}{3}$  B  $\frac{3}{2}$  C  $-\frac{2}{3}$  D  $-\frac{3}{2}$
- 6 If  $\sin x = \frac{1}{2}$ , x acute angle, then  $\sin 2x = \dots\dots\dots$   
 A 1 B  $\frac{1}{4}$  C  $\frac{\sqrt{3}}{2}$  D  $\frac{1}{\sqrt{3}}$

Third: Join From column (A) to column (B):

A	B
1 The slope of the straight line which parallel to x - axis is <u>0</u> ...	10
2 $\sin^2 30^\circ + \cos^2 30^\circ = $ <u>1</u> .....	0
3 If ABCD is a rectangle A (-1, -4) , C (5, 4) then the length of BD = <u>10</u> unit lenth	1
4 The equation of the straight line which passes through the origin point and its slope is 2 is Y = <u>2</u> ..... x	-3
5 The equation of the straight Line which passes through the point (2, -3) , parallel x - axis y = <u>-3</u>	2
6 The value of $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} = $ <u><math>\frac{\sqrt{3}}{2}</math></u> ...	$\frac{\sqrt{3}}{2}$

Fourth: Complete the following

- 1 If  $\overline{AB} \parallel \overline{CD}$  and the slope of  $\overline{AB} = \frac{1}{2}$ , then

The slope of  $\overline{CD} =$  $\frac{1}{2}$

- 2 The opposite figure: ... is a right angle

at B, AB = 3 cm , BC = 4cm, then

$\sin C =$  $\frac{5}{3}$

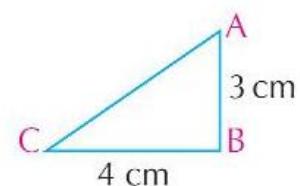
- 3 If the point (0, a) belongs to straight line

$3x - 4y = -12$  , then a = 3

- 4 If  $X \cos 60^\circ = \tan 45^\circ$ , then x = 2

- 5 The distance between the point (4, 3) and the origin point in the coorinate plane = 5

- 6 If the origin point is the mid - point of  $\overline{AB}$  , A(5, -2), then B (-5, 2)



**GEOMETRY – MODEL No 1****1****Q1****A) Choose the correct answer:**(1)  $\tan 45^\circ = \dots\dots\dots$ 

a)  $\sqrt{3}$

b)  $\frac{1}{\sqrt{3}}$

c) 1

d)  $\frac{1}{2}$

(2) The distance between  $(5, 0)$ ,  $(0, 12)$  equals ..... Length unit

a) 5

b) 7

c) 13

d) 17

(3) The equation of straight line its slope equals 1 and passes through the origin point is .....

a)  $X = -1$

b)  $Y = -1$

c)  $Y = -X$

d)  $Y = X$

**B): Without using calculator find the numerical value of:**

$$\sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ$$

**Q2****A) Choose the correct answer:**(1) If  $\sin X = \frac{1}{2}$ , where  $X$  is an acute angle, then  $\sin 2X = \dots\dots\dots$ 

a) 1

b) 2

c)  $\frac{1}{2}$

d)  $\frac{\sqrt{3}}{2}$

(2) The distance between  $(3, -4)$  and  $X$ -axis = ..... length unit

a) 3

b) 5

c) 4

d)  $-4$

(3) If the two straight lines  $X + Y = 5$ ,  $KX + 2Y = 0$  are parallel, then the value of  $K = \dots\dots\dots$ 

a) 2

b)  $-1$

c) 1

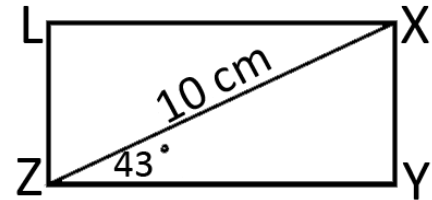
d)  $-2$

**B): Find the equation of the straight line passes through  $(1, 2)$  and perpendicular on the straight line  $X - 3Y + 7 = 0$**

Q3

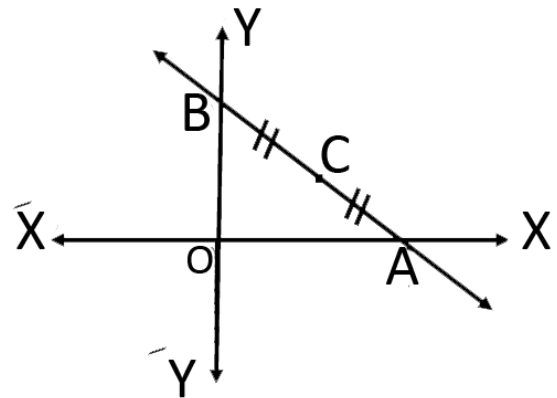
- A) Find the slope and the intercept part of Y-axis by the straight line  $\frac{x}{2} + 3Y = 6$

- B) In the opposite figure:  
 XYZL is a rectangle,  $XZ = 10$  cm,  
 $m(\angle XZY) = 43^\circ$ .  
 Find the perimeter of  $\triangle XYZ$



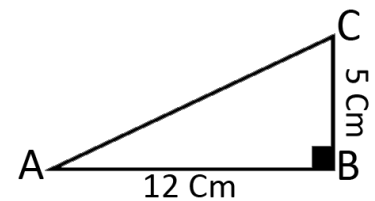
Q4

- A) In the opposite figure:  
 C is midpoint of  $\overline{AB}$ ,  $C(4, 3)$ ,  
 Find: ① The coordinate of A, B  
 ② The equation of  $\overleftrightarrow{AB}$



Q5

- A) Using the opposite figure,  
 Find the value of  $\sin A \cos B - \cos A \sin B$



- B) If  $A(X, 3)$ ,  $B(3, 2)$ ,  $C(5, 1)$ , and  $AB = BC$ ,  
 Find the value of X?

◆ ◆ ◆

*End of the questions*

**GEOMETRY – MODEL No 2****2****Q1** A) Choose the correct answer:

- (1) The distance between  $(0, 0)$ ,  $(3, -4)$  equals .... Length units  
a) 1                      b) 5                      c) -1                      d) 7
- (2) The equation of the straight line which passes the point  $(3, 5)$  and parallel to X – axis, is .....  
a)  $Y = 3$                       b)  $X = 3$                       c)  $X = 5$                       d)  $Y = 5$
- (3) In the isosceles right angle triangle, the tangent of its acute angle equals .....  
a)  $\sqrt{3}$                       b)  $\frac{1}{\sqrt{3}}$                       c) 1                      d)  $\frac{\sqrt{2}}{2}$

**B):** Find the equation of the straight line passes through  $(1, 2)$  and its slope  $\frac{2}{3}$ .

**Q2** A) Choose the correct answer:

- (1) AB is a diameter in circle M,  $A(-2, 3)$ ,  $B(6, -5)$ , then the coordinate of M = .....  
a)  $(4, 4)$                       b)  $(-2, 1)$                       c)  $(2, -1)$                       d)  $(-1, 2)$
- (2) In  $\triangle DEF$  is right triangle at E, which of the following is false?  
a)  $\tan D \times \tan F = 1$                       c)  $\cos D = \sin F$   
b)  $\sin D = \cos F$                       d)  $\cos D = \sin E$
- (3) The straight line whose equation  $3X + 4Y - 9 = 0$  is perpendicular on the straight line whose slope .....  
a)  $\frac{3}{4}$                       b)  $\frac{4}{3}$                       c)  $\frac{-3}{4}$                       d)  $\frac{-4}{3}$

**B):** Find the value of X, where X is an acute angle:

$$\cos(3X + 6)^\circ = \sin 30^\circ$$



## Q3

- A) ABC is right angled – triangle at B,  $AC = 5$  cm,  $BC = 3$  cm
- ① Prove that:  $\sin^2 A + \cos^2 A = 1$
  - ② Find the numerical value of  $\sin C - \cos C + \tan C$
- 
- B) ABCD is a quadrilateral,  $A(0, 6)$ ,  $B(-1, 3)$ ,  $C(5, 1)$ ,  $D(6, 4)$  by using the slope prove that ABCD is a rectangle.
- 

## Q4

- A) Find the slope of straight line  $\overleftrightarrow{AB}$  where  $A(4, 3\sqrt{3})$ ,  $B(5, 4\sqrt{3})$  then find the measure of the positive angle which  $\overleftrightarrow{AB}$  makes with positive direction of X – axis and find the length of intercept part from Y – axis
- 
- B) Find to the nearest minute value of Y where  $\cos Y = \frac{4}{3} - 2 \sin^2 45^\circ$  where Y is an acute angle.
- 

## Q5

- A) If the two straight lines  $Y = 5 - X$ ,  $KX + 2Y = 0$  are parallel, find the value of K
- 
- B) If the axis of symmetry of  $\overleftrightarrow{CD}$  passes through  $A(6, m)$  where  $C(3, 1)$ ,  $D(-3, 7)$ , **find** the value of m
- 

◆ ◆ ◆

*End of the questions*

**GEOMETRY – MODEL No****3****Q1****A) Choose the correct answer:**

(1)  $\sin 45^\circ \cos 45^\circ = \dots\dots\dots$

- a) 2                      b) 1                      c)  $\frac{1}{4}$                       d)  $\frac{1}{2}$

(2) In the  $\triangle ABC$  right at B.  $AB = \frac{1}{2} AC$ , then  $\cos A = \dots\dots\dots$

- a)  $\frac{1}{2}$                       b)  $\frac{\sqrt{3}}{2}$                       c)  $\frac{1}{\sqrt{2}}$                       d)  $\frac{1}{\sqrt{3}}$

(3) The distance between  $(3, -4)$  and X-axis =  $\dots\dots\dots$  length unit

- a) -3                      b) 4                      c) -4                      d) 3

B): In the  $\triangle ABC$  right at B,  $AC = 5$  cm ,  $BC = 4$  cmFind the numerical value of:  $\sin C \cos A + \cos C \sin A$ **Q2****A) Choose the correct answer:**(1) The straight line whose slope is additive invers is parallel to straight line whose equation is  $\dots\dots\dots$ 

- a)  $Y = X$                       b)  $Y = 1$                       c)  $X = 1$                       d)  $Y = -X$

(2) If the X-axis bisects  $\overleftrightarrow{AB}$  where  $A(3, 2)$  ,  $B(-2, Y)$ , then  $Y = \dots$ 

- a) 3                      b) 2                      c) -2                      d) 4

(3) Two perpendicular straight lines, slope of the first  $(-\frac{1}{4})$  and slope of the other  $(4K)$  , then  $K = \dots\dots\dots$ 

- a) 4                      b) 1                      c) -4                      d)  $\frac{1}{4}$

B): If the distance between  $A(X-1, 3)$  ,  $B(5, 1)$  equals  $\sqrt{13}$  length unit, find the value of X.

Q3

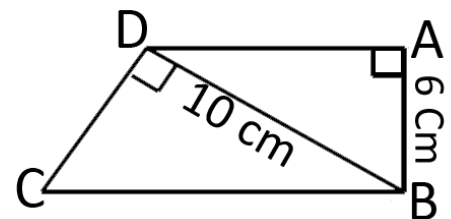
A) If  $\sin X = 3 \sin 30^\circ \cos 60^\circ$ , find the value of  $X$  to nearest minute, where  $X$  is an acute angle

B) The three points  $A(3, Y)$ ,  $B(X, 3)$ ,  $C(5, 2)$  are collinear, if  $B$  is midpoint of  $\overline{AC}$ , find the value of  $X + Y$

Q4

A) Find the equation of the straight line passes through  $(3, -1)$  and perpendicular on the straight line  $2X + Y = 5$

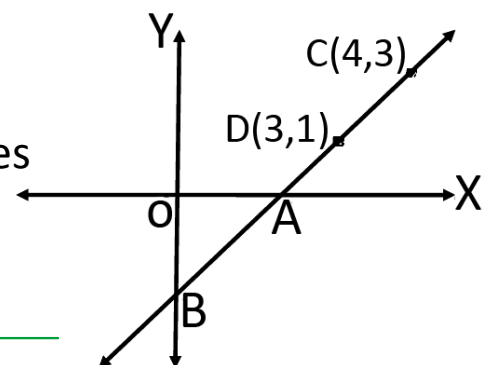
B) **In the opposite figure:**  
 $ABCD$  is trapezium right at  $A$ ,  
 $\overline{AD} \parallel \overline{BC}$ ,  $AB = 6 \text{ cm}$ ,  $BC = 10 \text{ cm}$   
 Find  $\tan(\angle ADB)$ , **Find** the length of  $\overline{CD}$



Q5

A)  $ABCD$  is a quadrilateral,  $A(5, 3)$ ,  $B(6, -2)$ ,  $C(1, -1)$ ,  $D(0, 4)$  by using the slope **prove that**  $ABCD$  is a parallelogram, then show that  $ABCD$  is a Rhombus

B) In the opposite figure:  
 The straight  $\overleftrightarrow{AB}$  passes through  $C(4, 3)$ ,  $D(3, 1)$  and cut the two axes  
 At  $A$ ,  $B$ , find the length of  $\overline{AO}$ ,  $\overline{OB}$   
 Where  $O$  is origin point



*End of the questions*

**GEOMETRY – MODEL No 4****4****Q1** A) Choose the correct answer:

(1) If  $(2, -1)$  is midpoint of line segment whose terminals  $(x, 2), (8, y)$ , then  $X + Y = \dots\dots\dots$

- a) Zero                      b) 4                      c) -4                      d) -8

(2) The St. line  $Y = KX + 1$  is parallel to St. line  $2Y - X = 5$ , then  $K = \dots$

- a) 1                      b) 2                      c) -2                      d)  $\frac{1}{2}$

(3) The equation of straight line passes  $(-2, 7)$  and parallel to Y-axis is  $\dots\dots\dots$

- a)  $X + 2 = 0$               b)  $X = 2$                       c)  $Y = 7$                       d)  $Y = -7$

B): Without using calculator find the numerical value of X:

$$\cos X = \frac{\sin 60 \sin 30}{\tan 45 \sin^2 45}, \text{ where } X \text{ is an acute angle}$$

**Q2** A) Choose the correct answer:

(1) The distance between  $(3, 0), (0, 4)$  equals  $\dots\dots\dots$  Length units

- a) 3                      b) 4                      c) 5                      d) 2

(2) If  $2 \sin X - 1 = 0$ , where X is an acute angle,  $m(\angle X) = \dots\dots$

- a)  $60^\circ$                       b)  $90^\circ$                       c)  $45^\circ$                       d)  $30^\circ$

(3)  $\triangle ABC$ ,  $m(\angle B) = 90^\circ$ ,  $3 \tan C - 4 = 0$ , then  $25 \sin C \cos C = \dots\dots$

- a) 3                      b) 4                      c) 25                      d) 12

B):  $\triangle ABC$  is right at B,  $2 AB = \sqrt{3} AC$ , find:

- ① The trigonometric ratio of  $\angle C$   
 ②  $m(\angle A)$

Q3

- A) Find the equation of the straight line passes through ( 1 , 2 ) and perpendicular on the lines  $X + Y = 7$
- 
- B) The straight line  $aX + 3Y - 6 = 0$ , passes the point ( 1 , 3 ), find the value of A, then find the length of the intercept part from Y-axis
- 

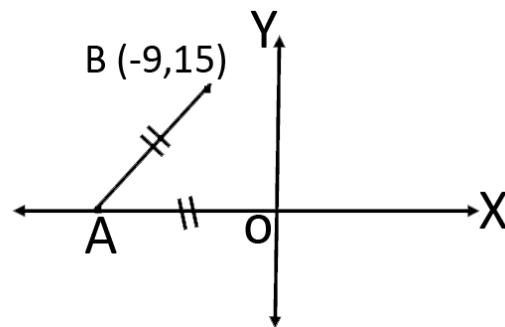
Q4

- A) ABCD is a trapezium in which  $\overline{AD} \parallel \overline{BC}$ ,  $m(\angle B) = 90^\circ$ ,  $AB = 3$  cm,  $AD = 6$  cm,  $BC = 10$  cm.

Prove that:  $\cos(\angle DCB) - \tan(\angle ACB) = \frac{1}{2}$

---

- B) **In the opposite figure:**  
 $A \in X\text{-axis}$ ,  $AO = OB$ ,  
 Where O is origin point  
 Find the length of  $\overline{AB}$   
 Where  $B(-9, 15)$



Q5

- A) If the triangle XYZ is right at Y,  $X(3, 5)$ ,  $Y(4, 2)$ ,  $Z(-5, a)$

- ① Find the value of a?
  - ② The area of  $\triangle XYZ$
- 

- B) IF  $C(6, -4)$  is midpoint of  $\overline{AB}$ ,  $A(5, -3)$ . **Find** the coordinate the point B

◆ ◆ ◆

*End of the questions*



**GEOMETRY – MODEL No 5****Q1** A) Choose the correct answer:

(1) In the  $\triangle ABC$ ,  $m(\angle A) = 85^\circ$ ,  $\sin B = \cos B$ , then  $m(\angle C) = \dots$

- a)  $30^\circ$                       b)  $45^\circ$                       c)  $50^\circ$                       d)  $60^\circ$

(2) The area of triangle bounded by lines  $X = 0$ ,  $Y = 0$ ,  $3X + 2Y = 12$  equals ..... Square units

- a) 6                              b) 12                              c) 4                              d) 5

(3) If the straight line passes through  $(1, y)$ ,  $(3, 4)$  and its slope equals  $\tan 45^\circ$ , then  $Y = \dots$

- a) 1                              b) 2                              c) -1                              d) 4

B): ABCD is a trapezium in which  $\overline{AD} \parallel \overline{BC}$ ,  $m(\angle B) = 90^\circ$ ,  $AB = 5\text{cm}$ ,  $AD = 4\text{ cm}$ ,  $BC = 12\text{ cm}$ .

Find the value of expression:  $\frac{\tan B \cos C}{\sin^2 C + \cos^2 B}$

**Q2** A) Choose the correct answer:

(1) The straight line  $aX + (2 - a)Y = 5$  parallel to straight line passes through two points  $(1, 4)$ ,  $(3, 5)$ , then  $a = \dots$

- a) 3                              b) -2                              c) 6                              d) 4

(2) In  $\triangle ABC$ ,  $2m(\angle C) = m(\angle A) + m(\angle B)$ , then  $m(\angle C) = \dots$

- a)  $30^\circ$                       b)  $60^\circ$                       c)  $45^\circ$                       d)  $90^\circ$

(3) The straight line  $\frac{x}{2} - \frac{y}{3} = 6$ , cut from  $X$  - axis a part of ..... Units

- a) 3                              b) 2                              c) 6                              d) 12

B): AB is diameter in circle M,  $B(8, 11)$ ,  $M(5, 7)$ , Find:

- ① Circumference of the circle□
- ② The equation of perpendicular line on  $\overline{AB}$  at point A

**Q3**

A) **Prove that** the quadrilateral ABCD where  $A(-1, 3)$ ,  $B(5, 1)$ ,  $C(7, 4)$ ,  $D(1, 6)$  is a parallelogram

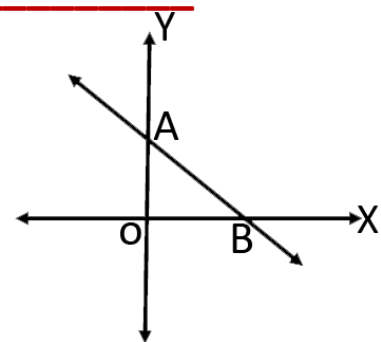
B) In the opposite figure:

The equation of  $\overleftrightarrow{AB}$  is  $Y = KX + C$

And cut two axes in two equal parts

And passes through  $(2, 3)$ , Find:

- ① Value of  $K, C$       ② Area of  $\triangle ABO$

**Q4**

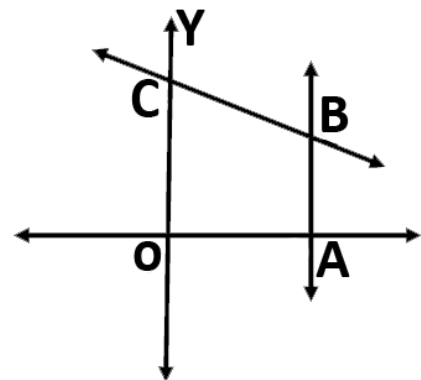
A) In the opposite figure:

$\overleftrightarrow{AB}$  parallel to Y-axis,

The equation of  $\overleftrightarrow{BC}$  is  $Y = -X + 3$

And passes through  $B(2, 1)$ , **find**:

- ① Length of BC      ② Area of OABC  
③  $m(\angle OCB)$



B)  $\triangle ABC$  is right at B:

- ① **Prove that:**  $\sin^2 A + \cos^2 A = 1$   
② If  $AB = 5$  cm,  $AC = 13$  cm, **find**  $m(\angle C)$  to nearest minute

**Q5**

A) Find the equation of straight line passes  $(3, 4)$  and make with positive direction of X – axis an angle of  $135^\circ$

B) Without using calculator, **prove that:**

$$\tan^2 60^\circ - \tan^2 45^\circ = \sin^2 60^\circ + \cos^2 60^\circ + 2 \sin 30^\circ$$

◆ ◆ ◆  
*End of the questions*

## GEOMETRY – MODEL No

6

## Q1 A) Choose the correct answer:

(1) If  $m(\angle A) = 75^\circ$ ,  $\sin B = \cos B$ , where B is acute angle, then  $m(\angle B) = \dots\dots\dots^\circ$

- a) 45                      b) 75                      c) 15                      d) 105

(2) If  $\triangle ABC$  is an isosceles triangle and right at C, then  $\tan A = \dots\dots\dots$

- a)  $\sqrt{3}$                       b)  $\frac{1}{\sqrt{3}}$                       c) 1                      d) -1

(3) If  $\overrightarrow{AB} \perp \overrightarrow{CD}$ , Slope of  $\overrightarrow{AB} = \text{zero}$ , then slope of  $\overrightarrow{CD} = \dots\dots\dots$

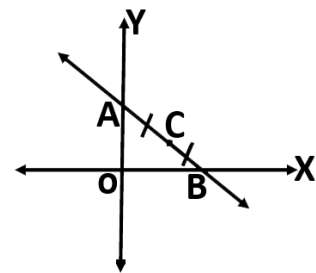
- a) 1                      b) -1                      c) Zero                      d) undefined

B): In the opposite figure:

C is midpoint of  $\overline{AB}$ ,  $C(4, 3)$

① Find the coordinate of A, B

② Find the area of  $\triangle AOB$



## Q2 A) Choose the correct answer:

(1) If  $\cos 3X = \frac{1}{2}$ , where  $3X$  is acute angle, then  $X = \dots\dots\dots^\circ$

- a) 20                      b) 30                      c) 45                      d) 60

(2) The radius of the circle whose its center  $(0, 0)$  and passes through the point  $(3, 4)$  equals  $\dots\dots\dots$  length units

- a) 7                      b) 1                      c) 12                      d) 5

(3) The measure of the exterior angle of an equilateral triangle = ...

- a)  $60^\circ$                       b)  $90^\circ$                       c)  $120^\circ$                       d)  $80^\circ$

B): Without using calculator **find** the value of X which satisfy:

$$2 \sin X = \tan^2 60 - 2 \tan 45^\circ$$

**Q3**

A) Find the equation of straight line which cut from two axes two positive parts **2** units, **3** units

---

B)  $\triangle ABC$  right at C,  $AC = 5$  cm,  $BC = 12$  cm, **Find** the numerical value of the expression:  **$\cos A \cos B - \sin A \sin B$**

---

**Q4**

A) ABCD is a parallelogram,  $A(3, 2)$ ,  $B(4, -5)$ ,  $C(0, -3)$ , find :

- ① The coordinate of the intersection point of its diagonal
  - ② The coordinate of point D
- 

B) Without using calculator **prove that:**

$$2 \sin 30^\circ + 4 \cos 60^\circ = \tan^2 60^\circ$$

---

**Q5**

A) **Prove that:**

$A(5, 1)$ ,  $B(3, -7)$ ,  $C(1, 3)$  are three non-collinear points

---

B) Find the equation of the straight line which is perpendicular to  $\overline{AB}$  at its midpoint where  $A(2, 1)$ ,  $B(4, 5)$

◆ ◆ ◆  
*End of the questions*

# GEOMETRY – MODEL No 7

## Q1 A) Choose the correct answer:

- (1) If the ratio between two complementary angles 1 : 2, then the measure of greatest angle = ..... °  
 a) 120                      b) 90                      c) 60                      d) 30
- (2) The area of the circle whose center ( 3 , 4 ) and passes through origin points equals ..... square units  
 a)  $49\pi$                       b)  $25\pi$                       c)  $10\pi$                       d)  $5\pi$
- (3) ABCD is a Rhombus, A ( - 3 , 2 ) , C ( -1 , - 2 ) then the slope of  $\overrightarrow{BD}$  = .....  
 a) - 2                      b)  $-\frac{1}{2}$                       c)  $\frac{1}{2}$                       d) 2

B): If A ( - 1 , 1 ) , B ( 3 , 1 ) , C ( 3 , 4 ) , **prove** that  $\triangle ABC$  is right at B and find its Area

## Q2 A) Choose the correct answer:

- (1) If  $\sin ( x + 5 ) = \frac{1}{2}$  , where ( X + 5 ) acute angle, X = .....  
 a)  $30^\circ$                       b)  $25^\circ$                       c)  $60^\circ$                       d)  $55^\circ$
- (2) If  $m_1$  ,  $m_2$  are two slopes of two parallel straight lines, then .....  
 a)  $m_1 - m_2 = 0$     b)  $m_1 - m_2 = 1$     c)  $m_1 \times m_2 = -1$     d)  $m_1 + m_2 = 1$
- (3) The equation of the straight line which passes through ( 2 , 3 ) and perpendicular on Y-axis is .....  
 a) X = 2                      b) X = 3                      c) Y = 2                      d) Y = 3

B): IF the distance between ( X , 5 ) and ( 6 , 1 ) equals  $2\sqrt{5}$  , **find** the value of X .



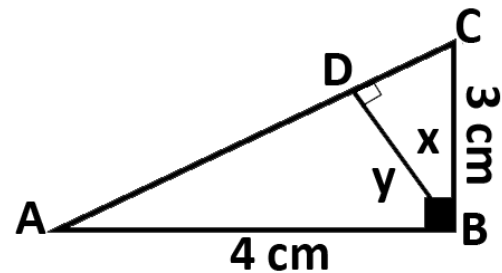
## Q3

A) In the opposite figure:

$\triangle ABC$  right at B,  $\overline{BD} \perp \overline{AC}$

AB = 3 cm, BC = 4 cm

Prove that:  $\tan X + \tan Y = \frac{25}{12}$



B) Find the equation of the straight line which cut from the positive part of Y-axis 5 units and perpendicular on the straight line whose equation  $2X - 5Y + 1 = 0$

## Q4

A) If  $\cos X = \tan 30^\circ \sin 60^\circ$ , where X acute angle.

Without using calculator find the value of  $\sin X \tan X$

B)  $\triangle ABC$  where its vertices A ( 0 , 0 ) , B ( 3 , 0 ) , C ( 3 , 4 ) and D , E , F are midpoints of its sides  $\overline{AB}$  ,  $\overline{BC}$  ,  $\overline{AC}$  respectively. **Find** the perimeter of  $\triangle DEF$

## Q5

A) Find the slope and the intercept part of X-axis if the equation of the straight line  $\frac{x}{2} + \frac{y}{3} = 1$

B) A ladder  $\overline{AB}$  is of length 6 meters, its upper edge A lies on a vertical wall and its other edge B on a horizontal floor. If C is the projection of point A on the surface for the floor and its angle of slope on the surface of the floor was measure of  $60^\circ$ , then find the length of  $\overline{AC}$ .

◆ ◆ ◆  
*End of the questions*

**GEOMETRY – MODEL No 8****8****Q1** A) Choose the correct answer:

(1) If  $X \tan 60^\circ = 9$ , then  $X = \dots\dots\dots$

- a)  $\sqrt{3}$                       b)  $2\sqrt{3}$                       c)  $3\sqrt{3}$                       d)  $9\sqrt{3}$

(2) The equation of straight line passes  $(-2, 5)$  and perpendicular on X-axis is  $\dots\dots\dots$

- a)  $X = -2$                       b)  $X = 2$                       c)  $Y = 5$                       d)  $Y = -5$

(3) If  $A(3, 4)$ , then the area of square on  $\overline{OA} = \dots\dots\dots$  square units where O is origin point

- a) 5                      b) 25                      c) 7                      d) 49

B): **Prove that** the points  $A(3, -1)$ ,  $B(-4, 6)$ ,  $C(2, -2)$  are lie on the same circle whose center  $M(-1, 2)$ , then find the area of the circle in the part of  $\pi$ .

**Q2** A) Choose the correct answer:

(1) The straight line which passes through origin point and  $(-1, -1)$  make a positive angle with positive direction of X-axis of measure  $\dots\dots\dots^\circ$

- a) 30                      b) 45                      c) 60                      d) 135

(2) If the ratio between two supplementary angles  $2 : 3$ , then the measure of smallest angle =  $\dots\dots\dots^\circ$

- a) 18                      b) 36                      c) 72                      d) 108

(3) The point .... lies on the straight line which passes  $(3, 2)$ ,  $(4, 4)$

- a)  $(1, 1)$                       b)  $(2, 4)$                       c)  $(5, 6)$                       d)  $(6, 3)$

B): If  $A(x, 3)$ ,  $B(3, 2)$ ,  $C(5, 1)$  and A lies on the axis of symmetry of  $\overline{BC}$ , find the value of X

Q3

- A) If  $\cos 2X = \tan 45 \sin 30$ , where  $2X$  is acute angle, without using calculator find the value of:  $\sin^2 X + \cos^2 X - 1$
- 
- B) Prove that the point  $A(5, 3)$ ,  $B(3, -2)$ ,  $C(-2, -4)$  are vertices of an obtuse - angled triangle at  $B$ , then find the coordinate of point  $D$  which make the figure  $ABCD$  is Rhombus and find its area.

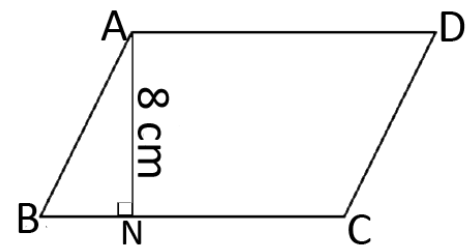
Q4

A) In the opposite figure:

ABCD is a parallelogram

Whose area  $96 \text{ cm}^2$ ,  $\overrightarrow{AN} \perp \overrightarrow{BC}$ ,If  $\tan B = 2$ ,  $\frac{BN}{NC} = \frac{1}{3}$ , find:

- ① Length of  $\overrightarrow{BC}$ ,  $\overrightarrow{AB}$       ②  $m(\angle D)$

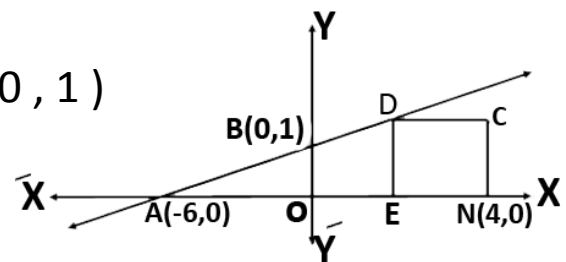


- B) Find the equation of the straight line which passes through  $(3, -5)$  and parallel to the straight line  $X + 2Y - 7 = 0$

Q5

A) The wind broke the upper point of a tree to make  $60^\circ$  angle with the ground level, if the top of the tree meets the ground 4 meters away from the button of the tree. Find the height of the tree to the nearest meter

- B) In the opposite figure:  
 AB passes through  $A(-6, 0)$ ,  $B(0, 1)$   
 DENC is a square,  $N(4, 0)$   
 Find the area of the square DENC



◆ ◆ ◆  
*End of the questions*

# GEOMETRY – MODEL No 9

## Q1 A) Choose the correct answer:

(1) The equation of the straight line passes ( 3 , 4 ) and parallel to Y-axis is .....

- a)  $X = 3$                       b)  $X = 4$                       c)  $Y = 3$                       d)  $Y = 4$

(2) A circle its center origin point and its radius is 2 units, which of the following points belongs to the circle?

- a) ( 1 , 2 )                      b) ( -2 , 1 )                      c) (  $\sqrt{3}$  , 1 )                      d) (  $\sqrt{2}$  , 1 )

(3) The  $\Delta ABC$  is acute angled-triangle, if  $m(\angle X) = 60^\circ$ ,  $\sin Y = \cos Y$  then  $m(\angle Z) = \dots\dots\dots^\circ$

- a) 70                                  b) 75                                  c) 80                                  d) 85

B):  $\Delta ABC$ , A ( 2 , 1 ) , B ( 2 , 5 ) , C ( 3 , 4 ) , D is midpoint of  $\overline{AB}$ , draw  $\overline{DE} \parallel \overline{BC}$  and cut  $\overline{AC}$  at E. **find** the equation of  $\overline{DE}$

## Q2 A) Choose the correct answer:

(1) If  $m_1$  ,  $m_2$  are two slopes of two parallel straight lines, then .....

- a)  $m_1 = m_2$                       b)  $m_1 = -m_2$                       c)  $m_1 + m_2 = 0$                       d)  $m_1 = \frac{-1}{m_2}$

(2) If  $\sin X = 2 \sin 30 \cos 60$ , then  $X = \dots\dots\dots^\circ$

- a) 30                                  b) 45                                  c) 60                                  d) 75

(3) If the distance between two points ( a , 0 ) , ( 0 , 1 ) is  $\sqrt{2}$  , units then a = .....

- a) -3                                  b) 1                                  c) 2                                  d) 3

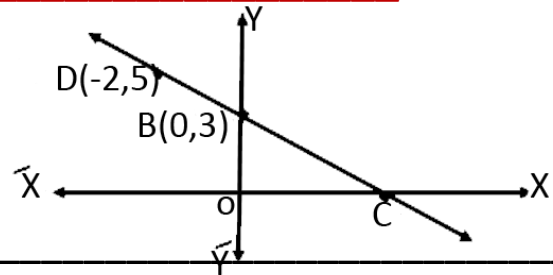
B): ABCD is a trapezium in which  $\overline{AD} \parallel \overline{BC}$ ,  $m(\angle B) = 90^\circ$ ,  $AB = 3$  cm,  $AD = 6$  cm,  $BC = 10$  cm.

**Prove that:**  $\cos(\angle DCB) - \tan(\angle ACB) = \frac{1}{2}$

Q3

A) If the points  $A(-1, 3)$ ,  $B(5, 1)$ ,  $C(X, 4)$  are vertices of a right angled – triangle. Find the value  $X$

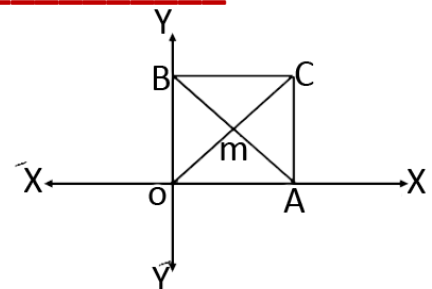
B) In the opposite figure:  
If  $B(0, 3)$ ,  $D(-2, 5)$ .  
**Find** the area of  $\triangle BCO$



Q4

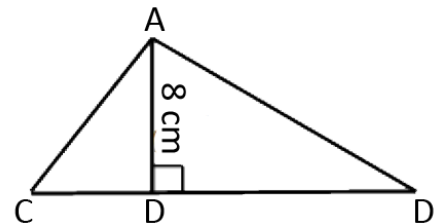
A) If  $X$  is an acute angle,  $\cos X \tan X = \frac{1}{2}$ , find the value of  $X$ ?

B) **In the opposite figure:**  
 $AOBC$  is a square,  
 $M$  is intersection point of its diagonal,  
 $M(2, 2)$ , **find** the equation of  $\overleftrightarrow{AB}$



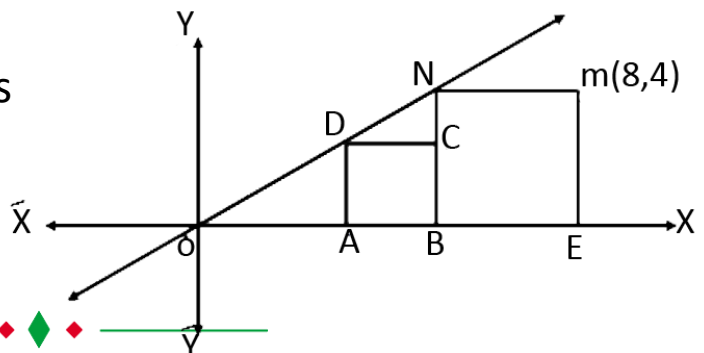
Q5

A) **In the opposite figure:**  
 $\overline{AD} \perp \overline{BC}$ ,  $AD = 8$  cm  
If  $\frac{1}{\tan B} + \frac{1}{\tan C} = \frac{3}{2}$ , Find the length of  $\overline{BC}$



B) **In the opposite figure:**  
 $ABCD$ ,  $EBNM$  are two squares  
 $M(8, 4)$

- ① Find the equation of  $ND$
- ② The coordinate of point  $D$



*End of the questions*

## GEOMETRY – MODEL NO

10

## Q1) A) Choose the correct answer:

(1) If C is midpoint of  $\overline{AB}$  where  $A(-4, -1)$ ,  $C(2, 1)$ , then  $B = \dots$

- a)  $(16, 0)$       b)  $(8, 3)$       c)  $(-2, 0)$       d)  $(1, 2)$

(2) The area of triangle bounded by lines  $X = 0$ ,  $Y = 0$ ,  $3X + 2Y = 6$  equals ..... square units

- a) 2      b) 3      c) 6      d) 8

(3) If  $\sin(X + 5) = \frac{1}{2}$ ,  $(x + 5)$  acute angle, then  $\tan(x + 20)^\circ = \dots$

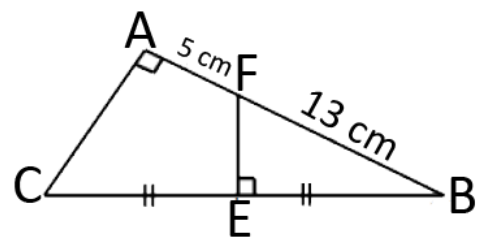
- a)  $\frac{\sqrt{2}}{2}$       b)  $\frac{1}{2}$       c)  $\frac{\sqrt{3}}{2}$       d) 1

## B): In the opposite figure:

E is midpoint of  $\overline{BC}$ ,  $\overline{FE} \perp \overline{BC}$

$\overline{AB} \perp \overline{AC}$ ,  $OB = 13$  cm,  $AO = 5$  cm.

Find  $\tan B$  ?



## Q2) A) Choose the correct answer:

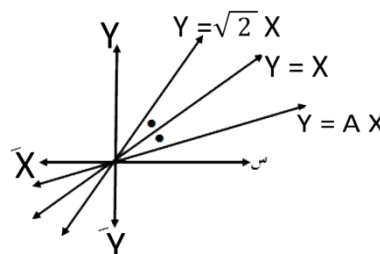
(1) The points  $(0, 0)$ ,  $(0, 8)$ ,  $(6, 0)$  represents the sides of ..... triangle

- a) Acute      b) Isosceles      c) Obtuse      d) Right

(2) In the opposite figure:

$a = \dots$

- a)  $\frac{1}{\sqrt{3}}$       b)  $\frac{1}{\sqrt{2}}$   
c)  $\sqrt{2}$       d)  $\sqrt{3}$



(3) If the two straight lines  $3Y + X - 7 = 0$ ,  $Y = KX + 5$  are perpendicular, then  $K = \dots$

- a) -3      b) 3      c)  $\frac{1}{3}$       d)  $-\frac{1}{3}$



B): Find the equation of straight line which passes through  $(1, 2)$  and perpendicular on straight line whose equation  $2Y - 3X + 1 = 0$

**Q3** A) On the orthogonal plane locate the points  $A(0,5)$ ,  $B(2,0)$ ,  $C(0,3)$ ,  $D(-2,0)$  then **find**:

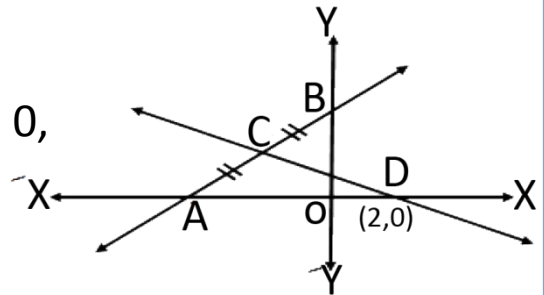
- ① The equation of St. Line passes through point **C** and parallel to  $\overleftrightarrow{BD}$
- ② The area of the figure ABCD

B) **By using the opposite figure:**

If the equation of  $\overleftrightarrow{AB}$  is  $2X - 3Y + 12 = 0$ ,

$D(2,0)$ ,  $C$  is midpoint of  $\overleftrightarrow{AB}$ ,

Find the equation of  $\overleftrightarrow{CD}$



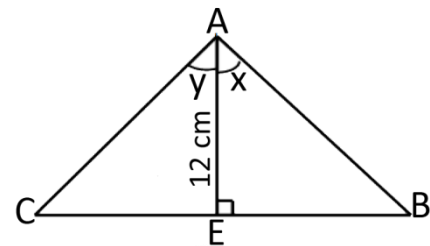
**Q4** A) By using the slope, prove that the points  $A(1,1)$ ,  $B(4,-2)$ ,  $C(6,0)$ ,  $D(3,3)$  are the vertices of a Rectangle, then find its area

B) In  $\triangle ABC$  right at  $B$ , **prove that**:  $\sin A + \sin C > 1$

**Q5** A) **In the opposite figure:**

$$\overline{AD} \perp \overline{BC}, \tan X + \tan Y = \frac{5}{4},$$

Find the length of  $\overline{BC}$

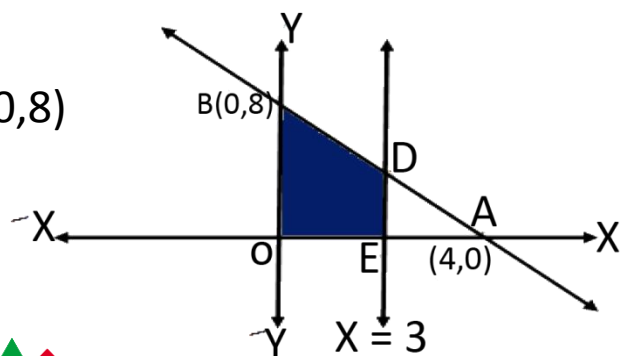


B) **In the opposite figure:**

AB passes through  $A(4,0)$ ,  $B(0,8)$

Equation of  $\overleftrightarrow{DE}$  is  $X = 3$ , find:

- ① The coordinate of  $D$
- ② The area of figure DEOB



◆ ◆ ◆

*End of the questions*

## GEOMETRY – MODEL NO

11

## Q1 A) Choose the correct answer:

(1) The distance between  $(4, -3)$  and X – axis = ..... length unit

- a)  $-3$                       b)  $1$                       c)  $3$                       d)  $4$

(2)  $\tan \theta \times \cos \theta = \dots\dots\dots$ 

- a)  $\cos \theta$                       b)  $\sin \theta$                       c)  $\frac{1}{\cos \theta}$                       d)  $\frac{1}{\sin \theta}$

(3) The slope of straight line whose equation:  $cX + aY + b = 0$  is ....

- a)  $-\frac{a}{b}$                       b)  $-\frac{a}{c}$                       c)  $-\frac{b}{c}$                       d)  $-\frac{c}{a}$

B): Find the equation of straight line which passes through the point  $(\sqrt{3}, -2)$  and make a  $60^\circ$  angle with positive direction of X-axis. **Then** find the length of intercept part of Y-axis

## Q2 A) Choose the correct answer:

(1) ABCD is square,  $A(3,5)$ ,  $B(4,2)$ , the slope of  $\overrightarrow{BC} = \dots\dots\dots$ 

- a)  $-3$                       b)  $3$                       c)  $4$                       d)  $5$

(2) In  $\triangle ABC$ ,  $m(\angle A) : m(\angle B) : m(\angle C) = 3 : 4 : 5$ , then  $\cos B = \dots\dots\dots$ 

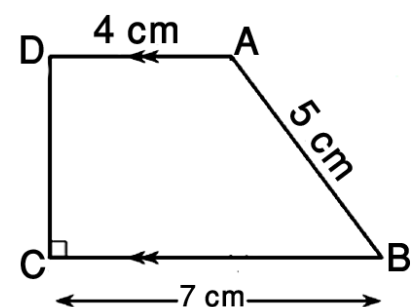
- a) Zero                      b)  $1$                       c)  $\frac{1}{2}$                       d)  $\frac{\sqrt{3}}{2}$

(3) The straight line whose equation  $Y = X$  passes through .....

- a)  $(-1, 0)$                       b)  $(0, 0)$                       c)  $(1, 0)$                       d)  $(0, -1)$

B): In the opposite figure:

ABCD is right trapezium at B,  $\overline{AD} \parallel \overline{BC}$ ,  
 $AB = 5 \text{ cm}$ ,  $BC = 7 \text{ cm}$ ,  $AD = 4 \text{ cm}$ , **find:**

①  $\sin B$ , then **find**  $m(\angle B)$ ② The area of trapezium **ABCD**

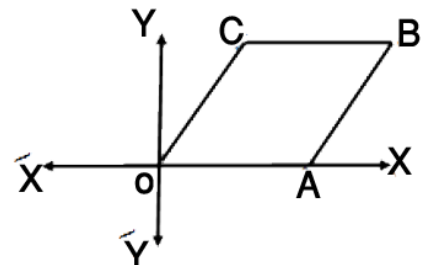
Q3

A) Without using calculator prove that:

$$3 \cos^2 30^\circ - \sin^2 45^\circ = \frac{7}{4} \tan 45^\circ$$

B) In the opposite figure:

OABC is a parallelogram, A(6,0) , B(2,4)

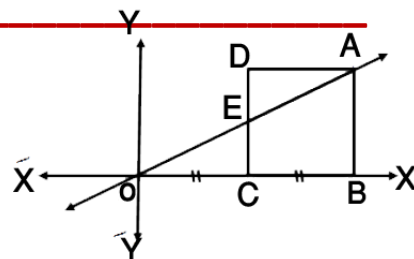
Find: ① Length of  $\overline{OB}$ ② Equation of  $\overrightarrow{OB}$ 

Q4

A) If the distance between two points ( a , 7 ) , ( -2 , 3 ) equals 5 units, find the value of a ?

B) In the opposite figure:

ABCD is square, BC = CO

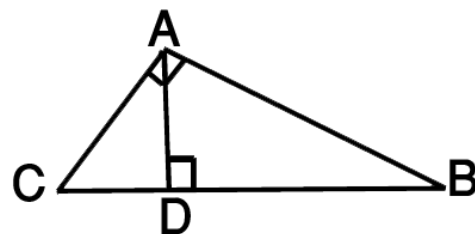
Find the equation of  $\overrightarrow{AO}$ 

Q5

A) If the points A ( 3 , X ) , B ( 4 , 1 ) , C ( 5 , 3 ) are collinear, find the value of X.

B) **In the opposite figure:** $\triangle ABC$  right at A ,  $\overline{AD} \perp \overline{BC}$ 

$$\frac{1}{\tan B} + \frac{1}{\tan C} = \frac{3}{2},$$

Find the length of  $\overline{BC}$ .

◆ ◆ ◆

*End of the questions*

## GEOMETRY – MODEL No

12

Q1) A) Choose the correct answer:(1) If the two lines whose slopes  $\frac{-2}{3}$ ,  $\frac{k}{2}$  are parallel, then  $K = \dots\dots$ 

- a)  $-\frac{3}{4}$                       b)                      c) 3                      d)  $-\frac{4}{3}$

(2) If  $\sin(x + 5) = \frac{1}{2}$  where  $(x+5)$  acute angle, then  $X = \dots\dots\dots^\circ$ 

- a) 5                      b) 10                      c) 25                      d) 30

(3) The area of triangle bounded by lines  $3X - 4Y = 12$ ,  $X = 0$ ,  $Y = 0$  equals  $\dots\dots\dots$  Square units

- a) 6                      b) 7                      c) 12                      d) 15

B): Find the equation of axis of symmetry of  $\overline{AB}$  where  $A(-2,3)$ ,  $B(2,4)$ Q2) A) Choose the correct answer:(1) ABCD is rhombus,  $A(3,3)$ ,  $C(-3,-3)$ , then slope of  $\overleftrightarrow{BD} = \dots\dots\dots$ 

- a) -1                      b) 1                      c)  $\frac{1}{3}$                       d)  $-\frac{1}{3}$

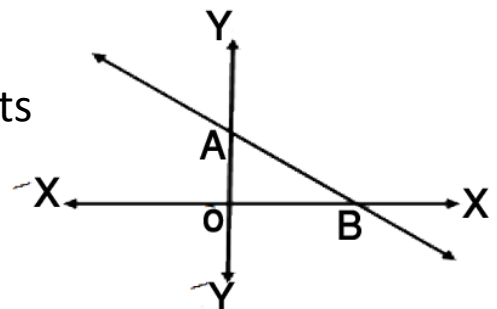
(2)  $\tan 75^\circ = \dots\dots\dots$ 

- a)  $\frac{\sin 75}{\cos 75}$                       b)  $\frac{\cos 75}{\sin 75}$                       c)  $3 \tan 25^\circ$                       d)  $3 \sin 25 \cos 25$

(3) The equation of straight line passes through  $(5, 3)$  and parallel to x-axis is  $\dots\dots\dots$ 

- a)  $X = 0$                       b)  $X = 5$                       c)  $Y = 0$                       d)  $Y = 3$

B): In the opposite figure:

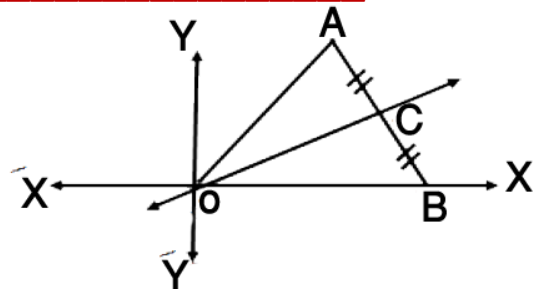
 $A(0, 6)$ , area of  $\triangle OAB = 9$  square unitsFind the equation of  $\overleftrightarrow{AB}$ 

Q3

A) Find the value of X which satisfies that:

$$4X = \cos^2 30^\circ \tan^2 30^\circ \tan^2 45^\circ$$

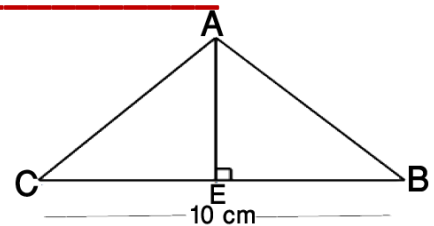
B) In the opposite figure:

 $\triangle BAO$  is an equilateralC is midpoint of  $\overline{AB}$ ,Find equation of  $\overrightarrow{OC}$ 

Q4

A) **Prove that:**  $\triangle ABC$  where A (1,1) , B(3,1) , C(1,3) is an isosceles triangle then find its area.

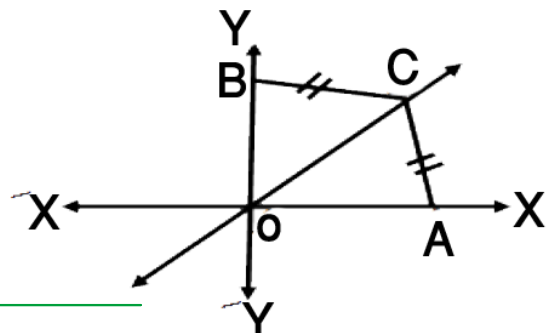
B) In the opposite figure:

 $\overline{AE} \perp \overline{BC}$  , BC = 10 cmFind the value of:  $AB \cos B + AC \cos C$ 

Q5

A) In  $\triangle ABC$  right at B,  $\sin A + \cos C = 1$ , Find the m (  $\angle A$  )B) In the opposite figure:

AO = 4 units, BO = 6 units

Equation of  $\overrightarrow{OC}$  is  $Y = X$ ,  $AC = BC$ Find the length of  $\overline{OC}$  .

◆ ◆ ◆

*End of the questions*

## GEOMETRY – MODEL NO

13

## Q1 A) Choose the correct answer:

(1) If the two lines  $X + Y = 5$  ,  $KX + 2Y = 0$  are parallel, then  $K = \dots\dots$

- a)  $-2$                       b)  $-1$                       c)  $1$                       d)  $2$

(2) If  $\sin (X + 10) = \frac{1}{2}$  , where  $(x+10)$  acute angle, then  $\cos 3X = \dots$

- a)  $1$                       b)  $\frac{1}{2}$                       c)  $\frac{\sqrt{3}}{2}$                       d)  $\frac{1}{\sqrt{2}}$

(3) In  $\triangle DEF$  right at E, which of the following false?

- a)  $\tan D \times \tan F = 1$                       c)  $\cos D = \sin F$   
 b)  $\sin D = \cos F$                       d)  $\cos D = \sin E$

B): Find the equation of straight line whose slope  $\frac{2}{3}$  and passes through the point  $(3, -1)$

## Q2 A) Choose the correct answer:

(1) AB is diameter in circle M,  $A(-2, 3)$  ,  $B(6, -5)$  , then the coordinate of M = .....

- a)  $(4, 4)$                       b)  $(-2, 1)$                       c)  $(2, -1)$                       d)  $(-1, 2)$

(2) The straight line whose equation  $3X + 4Y - 9 = 0$  is perpendicular to straight line whose slope .....

- a)  $\frac{3}{4}$                       b)  $\frac{4}{3}$                       c)  $-\frac{4}{3}$                       d)  $-\frac{3}{4}$

(3)  $\triangle DEF$  right at F, and  $\tan D = 1$ , then .....

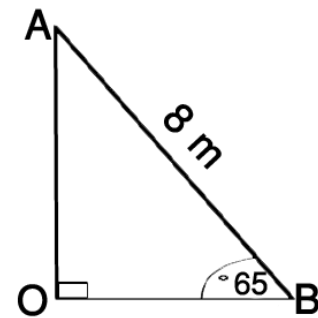
- a)  $DE = DF$                       b)  $m(\angle E) = m(\angle F)$                       c)  $DF = EF$                       d)  $m(\angle D) = m(\angle F)$

B): If the axis of symmetry of CD passes through  $A(6, m)$  where  $C(3, 1)$  ,  $D(-3, 7)$  , **find** the value of m



**Q3 A) In the opposite figure:**

$\overline{AB}$  is a ladder of length 8 meters, inclined on a horizontal floor with angle  $65^\circ$  and its upper edge **A** lies on a vertical wall  $\overline{OA}$  and its other edge **B** on a horizontal floor  $\overline{OB}$ . Find the length of  $\overline{OB}$ .

**B) In the opposite figure:**

OADB is a parallelogram

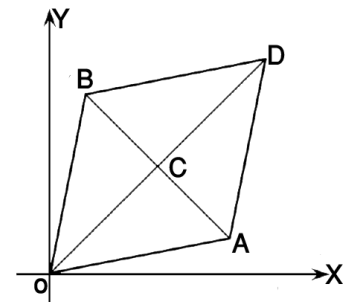
Its diagonal intersect at C,

O is origin point, A ( 5 , 1 ) , B ( 1 , 5 )

① Find coordinate of C , D

② Find the m (  $\angle DOE$  )

③ Prove that OADB is rhombus

**Q4 A) If Y is acute angle,  $\sin Y \sin^2 45 = \frac{\tan^2 45 - \cos^2 60}{\tan 60}$** 

**Find** the value of Y

B) ABCD is a rectangle, A ( 1 , 1 ) , B ( 3 , 3 ) , C ( 0 , - 3 X ) , D ( X , Y )  
Find the value of X , Y

**Q5 A)  $\triangle ABC$  is right at B,  $7 \tan A - 24 = 0$ ,  
Find the value:  $1 - \tan A \sin C$** **B) In the opposite figure:**

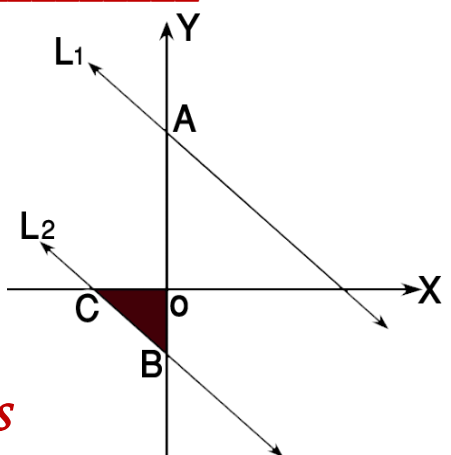
$L_1$  ,  $L_2$  are two parallel lines,

$L_1 : Y = 5 - X$  , AB = 7 units

$L_2$  cut two axes in B, C, find:

① Length of  $\overline{OA}$  ,  $\overline{OC}$

② Area of  $\triangle OBC$



*End of the questions*

## GEOMETRY – MODEL No

14

## Q1 A) Choose the correct answer:

(1) If the point ( K , 2 K ) lies on the St. line  $2 X + Y = 8$ , then K = ....

- a) -2                      b) 1                      c) 2                      d) 3

(2) If  $\sin 2 X = \frac{\sqrt{3}}{2}$ , where 2 X an acute angle, then X = .....°

- a) 20                      b) 30                      c) 45                      d) 60

(3) The opposite figure:

Quarter circle of radius 7 cm

Its perimeter = ..... cm

- a) 11                      b) 14                      c) 22                      d) 25



B): If the point ( 5 , 2 ) is midpoint of  $\overline{AB}$ , A ( X , 7 ) , B ( - 4 , Y )  
Find the value of X + Y

## Q2 A) Choose the correct answer:

(1) ABCD is a rhombus,  $m(\angle B) + m(\angle D) = 200^\circ$ , then  $m(\angle BAC) =$  .

- a) 40                      b) 50                      c) 80                      d) 10

(2) The equation of straight line which passes through ( -2 , K ) and parallel to X-axis is .....

- a)  $X = -2$                       b)  $Y = -2$                       c)  $X = K$                       d)  $Y = K$

(3) The straight line whose equation  $B X + C Y + A = 0$ , its slope = ....

- a)  $-\frac{b}{c}$                       b)  $-\frac{c}{b}$                       c)  $-\frac{c}{a}$                       d)  $\frac{c}{b}$

B):  $\triangle ABC$ , A ( 3 , 2 ) , B ( 4 , - 5 ) , C ( 0 , - 3 )

$\overline{AD}$  is median, **Find** the equation of  $\overleftrightarrow{AD}$

## Q3

A) Find the value of X which satisfies:

$$X \sin^2 45^\circ = \sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$$


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B) ABCD is a rectangle in which its length is twice its width, A( 8 , 8 ) , C ( - 2 , 3 ) . **Find** its perimeter?

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## Q4

A) By using the slope, prove that the points A ( -1 , -1 ) , B ( 2 , 3 ) , C ( 6 , 0 ) , D ( 3 , -4 ) are vertices of square.

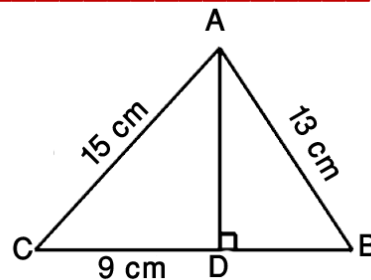
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B) In the opposite figure:

$\triangle ABC$ ,  $AD \perp BC$ ,  $AC = 15$  cm,

$AB = 13$  cm,  $CD = 9$  cm

Find the value of:  **$\tan B - \cos C$**



## Q5

A)  $\triangle ABC$  is right at B,  $AC = 8$  cm,  $m(\angle A) = 56^\circ$ , **find** to the nearest cm the perimeter of  $\triangle ABC$

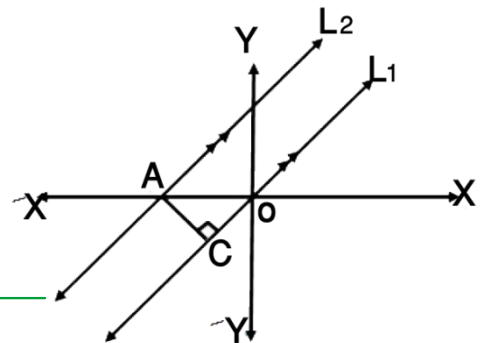
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B) In the opposite figure:

Equation of  $L_1$  is  $Y = X$ ,  $L_1 \parallel L_2$

$AC = 3\sqrt{2}$  unit length

**Find** the equation of  $L_2$



◆ ◆ ◆

*End of the questions*

## GEOMETRY – MODEL NO

15

Q1 A) Choose the correct answer:

(1) The distance between  $(K, -4)$  and Y-axis is ..... units,  $K \in \mathbb{R}$ 

- a) 4                      b) K                      c) -4                      d)  $|K|$

(2) If  $\sin X = 2 \cos 60^\circ \sin 30^\circ$ , where X is acute angle, then  $X = \dots^\circ$ 

- a) 30                      b) 60                      c) 45                      d) 75

(3) The two lines  $3X - 4Y - 3 = 0$ ,  $4X + KY - 8 = 0$ , are perpendicular, then  $K = \dots\dots\dots$ 

- a) -4                      b) -3                      c) 3                      d) 4

B): ABCD is a square,  $A(5, 4)$ ,  $C(-1, 6)$ Find the equation of  $\overleftrightarrow{BD}$ 

Q2 A) Choose the correct answer:

(1) A circle, its center is an origin point, and its radius is 2 units, which of the following points belongs to the circle?

- a)  $(1, 2)$                       b)  $(-2, 1)$                       c)  $(\sqrt{3}, 1)$                       d)  $(\sqrt{2}, 1)$

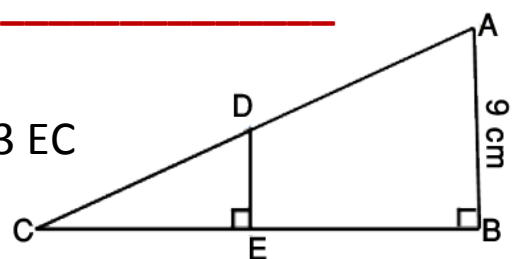
(2)  $\triangle ABC$  right at B,  $3AC = 5BC$ , then  $\tan A = \dots\dots\dots$ 

- a)  $\frac{3}{5}$                       b)  $\frac{5}{3}$                       c)  $\frac{3}{4}$                       d)  $\frac{4}{3}$

(3) The straight line  $2X - 3Y - 6 = 0$  cut from Y-axis a part of ..... length unit

- a) -6                      b) -2                      c)  $\frac{2}{3}$                       d) 2

B): In the opposite figure:

ABC is right at B,  $AB = 9$  cm,  $4DE = 3EC$  $\overline{DE} \perp \overline{BC}$ , **find** the area of  $\triangle ABC$ 

## Q3

A) Find the value of X which satisfies:

$$\sin X \sin^2 60^\circ = 3 \sin^2 45^\circ \cos^2 45^\circ \cos 60^\circ$$


---

B) In  $\triangle ABC$ ,  $A(1, 1)$ ,  $B(3, 1)$ ,  $C(1, 3)$ .

① Prove that  $\triangle ABC$  is an isosceles triangle

② Find the equation of axis of symmetry of the triangle.

---

## Q4

A) By using the slope, prove that the points  $A(-1, 3)$ ,  $B(5, 1)$ ,  $C(6, 4)$ ,  $D(0, 6)$  are vertices of a rectangle.

---

B)  $\overline{AB}$  is a diameter in the circle M,  $M(5, 7)$ ,  $B(8, 11)$ , find the equation of the perpendicular straight line on AB at point A

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## Q5

A) If  $A(X, 3)$ ,  $B(3, 2)$ ,  $C(5, 1)$ , and  $AB = BC$   
Find the value of X

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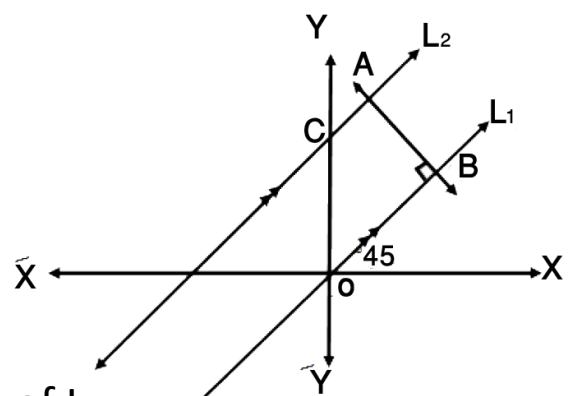
B) In the opposite figure:

$L_1 \parallel L_2$ ,  $L_1$  make with positive direction of X-axis angle of measure  $45^\circ$  and passes through origin point,  $A \in L$ ,  $A(1, 5)$   $\overline{AB} \perp L_1$ ,  $L_2$  cut Y-axis at point C, find:

① Equation of  $L_1$

② Equation of  $L_2$

③ Length of  $\overline{AB}$



◆ ◆ ◆  
*End of the questions*

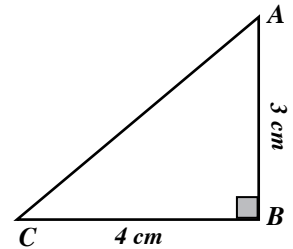
(1) Cairo

1 Complete the following:

- a) If  $\sin x = \frac{\sqrt{3}}{2}$ , where  $x$  is the measure of an acute angle, then  $x = \dots\dots\dots$ .
- b) If  $A(5, 3)$ ,  $B(1, 7)$ , then the coordinates of the mid-point of  $\overline{AB}$  is  $\dots\dots\dots$ .
- c) The equation of the straight line whose slope 5 and intersects 7 units from the positive part of the  $y$ -axis is  $\dots\dots\dots$ .
- d) If  $ABCD$  is a rhombus, where  $A(6, 4)$ ,  $B(4, -2)$ , then the perimeter of the rhombus  $ABCD = \dots\dots\dots$ .
- e)  $2 \cos 60^\circ = \dots\dots\dots$ .

f) In the opposite figure:

$ABC$  is a right angled triangle at  $B$ ,  
 $AB = 3$  cm,  
 $BC = 4$  cm, then  $\cos C = \dots\dots\dots$



2 Choose the correct answer from those between brackets:

- a) If  $\cos x = \sin 45^\circ$ , where  $x$  is the measure of an acute angle, then  $x = \dots\dots\dots^\circ$   
 (15, 30, 45, 60)
- b) The distance between the point  $(3, -5)$  and the  $x$ -axis equals..... unit of length.  
 (-5, 3, 5,  $\sqrt{34}$ )
- c) If the straight line  $L$  is perpendicular to the straight line whose equation  $y - 2x = 7$ , then the slope of  $L$  equals  $\dots\dots\dots$ .  
 (3, 2,  $-\frac{1}{3}$ ,  $-\frac{1}{2}$ )
- d) The slope of  $\overleftrightarrow{AB}$  which passes through  $A(1, 5)$ ,  $B(2, 3)$  is  $\dots\dots\dots$ .  
 a) 2                      b)  $\frac{1}{2}$                       c) -2                      d)  $-\frac{1}{2}$
- e) The equation of the straight line which is parallel to the line  $3x + 9y - 6 = 0$  and passes through  $(0, 5)$  is  $\dots\dots\dots$ .
- f) If  $2 \sin X = \tan 60^\circ$  where  $X$  is an acute angle, then  $m(\angle X) = \dots\dots\dots$   
 a)  $60^\circ$                       b)  $45^\circ$                       c)  $30^\circ$                       d)  $40^\circ$



- 3 a) Without using calculator, find the value of  $x$  which satisfies:  $\tan x = 4 \cos 60^\circ \sin 30^\circ$  where  $x$  is the measure of an acute angle.

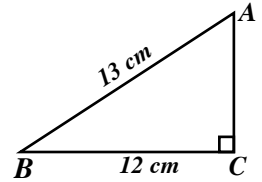
b) Prove that the points  $A(4, 3)$ ,  $B(1, 1)$  and  $C(-5, -3)$  are collinear.

- 4 a) If the straight line whose equation is  $x + 2y - 3 = 0$  is parallel to the straight line passing through the points  $(2, 3)$  and  $(1, 5)$  which lie on the same plane, then find the value of  $a$ .

b) In the opposite figure:  $ABC$  is a right-angled  $\triangle$  at  $C$ ,  
 $AB = 13$  cm,  $BC = 12$  cm.

a) Find the length of  $\overline{AC}$

b) Prove that:  $\sin A \cos B + \cos A \sin B = 1$



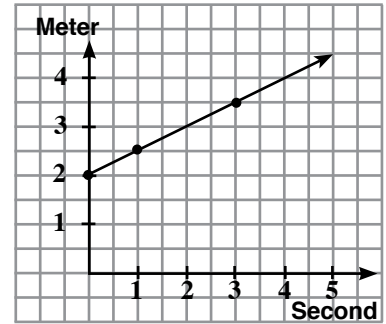
- 5 a) If  $\overline{AB}$  is a diameter in circle  $M$  where  $M(5, 2)$  and  $A(1, 3)$ , then find the equation of the tangent to the circle at  $A$ .

b) In the opposite figure:

a particle moves with a constant speed ( $v$ ) where the distance ( $d$ ) is measured by meter and time ( $t$ ) by second. Find the following:

1) The equation of the straight line which represented the movement of the particle.

2) The time in which the particle covers in distance of 3.5 meters from the beginning of the movement.



## (2) Giza

- 1 Complete to make correct statement:

a)  $\cos 2 45^\circ = \dots\dots\dots$

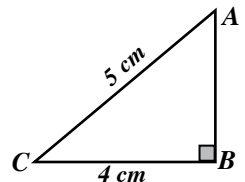
b) The distance between the point  $(-3, 4)$  and the point of origin equals  $\dots\dots\dots$

c) In the opposite figure:  $\tan C = \dots\dots\dots$

d) If  $L_1 \parallel L_2$  and the slope of  $L_1 = -1$ , then the slope of  $L_2 = \dots\dots$

e)  $\sqrt{3} \tan 60 = \dots\dots\dots$

f) If  $ABCD$  is a square, where  $A(7, -2)$ ,  $B(-3, 1)$ , then the area of the square  $ABCD = \dots\dots\dots$



**2 Choose the correct answer from those between brackets:**

- a) If  $\sin x = \frac{\sqrt{3}}{2}$ , where  $x$  is an acute angle, then  $x = \dots\dots\dots$  .  
a)  $30^\circ$                       b)  $45^\circ$                       c)  $60^\circ$                       d)  $90^\circ$
- b) If  $A(2, 4)$ ,  $B(6, 0)$ , then the coordinates of mid-point of  $\overline{AB} = \dots\dots\dots$  .  
a.  $(4, 4)$                       b.  $(8, 4)$                       c.  $(-2, 2)$                       d)  $(4, 2)$
- c) If  $\sin X = \cos 60^\circ$ , where  $X$  is an acute angle, then  $m(\angle X) = \dots\dots\dots$   
a)  $60^\circ$                       b)  $45^\circ$                       c)  $30^\circ$                       d)  $15^\circ$
- d) The straight line of equation:  $2y = 3x + 1$  intersects a part of the Y-axis equals  $\dots\dots\dots$  units.  
a)  $\frac{1}{2}$                       b) 2                      c) 3                      d)  $-\frac{1}{2}$
- e) The points  $A(-2, 4)$ ,  $B(1, -1)$ ,  $C(4, 5)$  represents:  
1) Three collinear points                      2) equilateral triangle  
3) isosceles triangle                      4) a scalene triangle
- f) If  $m(\angle B) = 90^\circ$ ,  $AB = 5$  cm,  $BC = 12$  cm,  $AC = 13$  cm, then  $\sin C = \dots\dots\dots$   
a)  $\frac{5}{13}$                       b)  $\frac{5}{12}$                       c)  $\frac{12}{13}$                       d)  $\frac{13}{5}$

**3** a)  $\overline{AB}$  is a diameter in circle  $M$  where  $A(1, 5)$ ,  $B(2, 6)$  find the coordinates of  $B$ .

b)  $ABC$  is a right-angled  $\triangle$  in  $B$ , if  $2AB = \sqrt{3} AC$ , find the main trigonometrical ratios of the angle  $C$ .

**4** a) If  $\sin X = \sin 60^\circ \cos 30^\circ - \sin 30^\circ \cos 60^\circ$

without using calculator, find the  $m(\angle X)$  where  $X$  is an acute angle.

b) Prove that: the points  $A(-3, 0)$ ,  $B(3, 4)$  and  $C(1, -6)$  are the vertices of an Isosceles triangle of vertex  $A$ .

**5** a) Find the equation of the straight line drawn passing to the point  $(1, 3)$  and perpendicular to st. line of equation  $y = \frac{1}{4}x - 2$ .

b) If the ratio between two measures of supplementary angles as a ratio  $3 : 5$ .

**Find** the value of each one by circular measure.

### (3) Alexandria

#### 1 Choose the correct answer from those given:

1)  $\triangle ABC$  is right-angled at B,  $A(2, 5)$ ,  $B(-2, -3)$ , then the slope of  $\overline{BC}$  equals .....  $[-2, -0.5, 0.5, 2]$

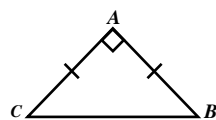
2) If  $\sin(x + 5) = \frac{1}{2}$ , then  $x = \dots\dots\dots^\circ$ .  $[5, 10, 25, 30]$

3) The slope of straight line which is perpendicular to straight line  $2x + 3y = 1$  is .....  $[\frac{2}{3}, \frac{-2}{3}, \frac{3}{2}, \frac{-3}{2}]$

d) The distance between the two straight lines  $y - 3 = 0$ ,  $y + 2 = 0$  = .....  $[1, 2, 3, 5]$

e) In the opposite figure ABC is a right angled triangle at A,  $AB$

$= AC$ ,  $\tan c = \dots\dots\dots$ .  $[1, \frac{1}{2}, \frac{\sqrt{3}}{2}, \frac{1}{\sqrt{3}}]$



f) The slope of straight line which parallel to the x- axis is .....  $[1, -1.0, \text{unknown}]$

#### 2 Complete the following:

a)  $\cos 60 = \dots\dots\dots$

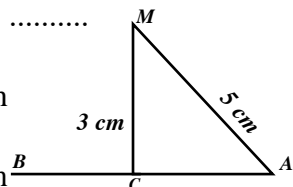
b) The straight line  $2x + 3y = 6$  intercepts from the y - axis a part of length .....  $[1, -1.0, \text{unknown}]$

c) If  $L_1 \perp L_2$ , the slope of  $L_1 = \text{zero}$ , then the slope of  $L_2 = \dots\dots\dots$

d) If  $\cos \theta = 0.6217$ , then  $m(\angle \theta) = \dots\dots^\circ \dots\dots'$ , such that  $\theta$  is an acute angle.

e) The point (....., ..... ) is the midpoint of  $\overline{AB}$  such that  $A(1,5)$ ,  $B(3,7)$ .

f) If  $\cos A = 0.6217$ , where A is an acute angle, then  $m(\angle A) = \dots\dots^\circ \dots\dots'$



3 a) XYZ is a right angled triangle at Y in which  $XY = 6$  cm,  $XZ = 10$  cm, Find the value of 1)  $\tan X \tan Z$  2)  $\sin [(X+Z) - 30^\circ]$

b) Prove that the points  $A(-3, 0)$ ,  $B(3,4)$  and  $C(1, -6)$  are the vertices of an isosceles triangle. Then find its surface area.

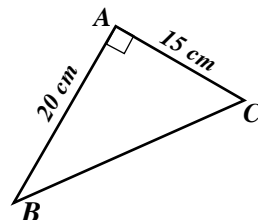
4 a) Prove that the points  $A(4, 3)$ ,  $B(1,1)$  and  $C(-5, -3)$  are located on the collinear.

b) In the opposite figure:

ABC is a right-angled  $\triangle$  at A.

Find length of  $\overline{BC}$  and then prove that:

$\cos C \times \cos B - \sin C \sin B = \text{zero}$



- 5 a) Find the equation of the straight line passing through the points (1,2) and parallel to the straight line passing through the two points A (-3,2) , B (-4,5).
- b) ABCD is a parallelogram in which E is the intersection point of its diagonals, A(3, -1), B(6, 2), C(1, 7) **find:**
- i) coordinates of each of E, D.      ii) length of  $\overline{DE}$ .

## (4) Qalubia

### 1 Complete:

- a) If A (3 , 5) , B (1 , -1) , C is midpoint of  $\overline{AB}$  , then C (..... , .....).
- b)  $\tan 30^\circ = \dots\dots\dots$
- c) If  $\tan (x + 15^\circ) = 1$  , then  $m(\angle x) = \dots\dots\dots$  .
- d) The axis of symmetry of the common chord of two intersecting circles is ..... .
- e) If  $\sin x = \sqrt{2} \sin 45^\circ \cos 60^\circ$  , then  $m = (\angle x) = \dots\dots\dots$  .
- f) If A (5, 5), B (3, 4), (-4, 3) are the vertices of  $\triangle ABC$ , then the length of its perimeter = .....

### 2 Choose the correct answer:

- a) The slope of a straight line which makes an angle of measure  $45^\circ$  with the positive direction of X - axis = ..... .  $(1, \frac{1}{\sqrt{2}}, \sqrt{3}, \text{otherwise})$
- b)  $4 \cos 30^\circ \tan 45^\circ = \dots\dots\dots$
- a) 12                      b) 3                      c) 6                      d)  $2\sqrt{3}$
- c)  $4 \cos 30^\circ \tan 60^\circ = \dots\dots\dots$  . (12 , 3 , 4 , 6)
- d) The straight line whose equation  $4y = 5x + 12$  cuts from Y - axis a part of length = ..... units. (3 , 12 , 5 , otherwise)
- e) If  $m_1$  and  $m_2$  are two slopes of two straight lines  $L_1$  and  $L_2$  respectively and  $m_1 - m_2 = 0$  , then ..... ( $L_1 \perp L_2$ ,  $L_1 \parallel L_2$ , intersecting, otherwise).
- f) If A (2, 0), B (2, 5), C (1, 4), D (1, 9) are four points in the same co-ordinate plane, then ..... .
- a)  $AB = CD$               b)  $AB < CD$
- c)  $AB > CD$               d) A, B, C and D are collinear

- 3 a) **Without using a calculator prove that:**  $\sin 30^\circ \cos 60^\circ + \cos^2 30^\circ + 2 \tan 45^\circ = 6 \sin^2$

b) In  $\triangle ABC$ : A (6, 0) , B (2 , - 4) , C (- 4 , 2). Prove that: the  $\triangle ABC$  is a right-angled triangle.

4 a) Prove that the points A (-3 , 0) , B (3 , 4), C (1 , - 6) are vertices of an isosceles triangle whose vertex A, then find the length of the drawn line segment from A perpendicular on  $\overline{BC}$ .

b) If the ratio between the measures of two complemently angles as a ratio 3 : 5, find the value of each one by circular measure.

5 a) Find the equation of the St. line which is passing the point (3 , -7) and it is perpendicular to another straight line whose slope =  $\frac{1}{3}$

b) **Find** the equation of the straight line L such that its Y-intercept equals 3 and it's parallel to the straight line which passes through the two points (-1, 2), (2, 3).

## (5) Menofia

1 Choose the correct answer from the given ones:

(1) If  $\sin (x + 5)^\circ = \frac{1}{2}$  , then  $m (\angle m)$  where x is an acute = .....°.

- a) 5                      b) 10                      c) 25                      d) 30

(2) If A ( $x_1, y_1$ ), B ( $x_2, y_2$ ), then  $AB = \dots\dots\dots$

- a)  $x_1 x_2 + y_1 y_2$                       b)  $\sqrt{x_1 x_2 + y_1 y_2}$   
c)  $(x_1 - x_2, y_1 - y_2)$                       d)  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

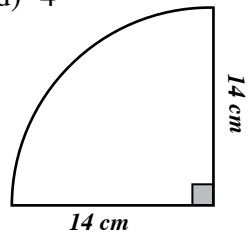
(3) The straight line which passes through the two points (a , 0) and (0 , 4) and is parallel to the straight line which makes an angle  $(45)^\circ$  with the positive direction of X-axis then a = ..... .

- a) 4                      b) -1                      c) 1                      d) -4

(4) A wire is bent to a quarter of a circle has radius 14 cm as the opposite figure:

then the length of its wire = ..... cm. ( $\pi = \frac{22}{7}$ )

- a) 154                      b) 50                      c) 26                      d) 22



(5) If the  $\triangle ABC$  is a right-angle at B, then  $\sin A + \cos A \dots\dots\dots$  .

- a) equal zero                      b) equal 1                      c) less than 1                      d) more than 1

- (6) The straight line whose equation  $4y = 3x + 20$  cuts from Y-axis part of length = ..... units
- a) 20                      b) 3                      c) 5                      d) 4

**2 Complete the following:**

- (1)  $2 \cos^2 60^\circ = \dots\dots\dots$
- (2) The equation of straight line which passes through the points  $(-3, -4)$  and parallel to y - axis is ..... .
- (3) A circle its center is the origin point and radius length 2 units. Which of the following points belongs to the circle?
- a)  $(1, 2)$                       b)  $(-2, 1)$                       c)  $(\sqrt{3}, 1)$                       d)  $(\sqrt{2}, 1)$
- (4)  $\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ = \dots\dots\dots$  .
- (5) If  $(0, 0)$  is the midpoint of A B where  $A = (5, -2)$  , then  $B = (\dots\dots\dots, \dots\dots\dots)$ .
- (6) The number of axis of symmetry of semicircle is ..... .

- 3** a) D E O is a right - angled triangle at E . If D E = 5 cm and D O = 13 cm.

**Find the value of:**  $\cos D \cos O - \sin D \sin O$ .

- b) A B C D is a parallelogram,  $A = (3, 2)$  ,  $B = (4, -5)$ ,  $C = (0, -3)$ , Find:
1. The coordinates of the point at which the two diagonals intersect.
  2. The coordinates of point D.

- 4** a) If a triangle with vertices  $A = (3, -1)$  ,  $B = (x, 3)$  and  $C = (5, 3)$  is right-angled at A then:

**Find the value of x and find its area.**

- b) Without using calculators:

**Find the value of:**  $\sin 45^\circ \cos 45^\circ + \sin 30^\circ \cos 60^\circ - \tan 45^\circ$

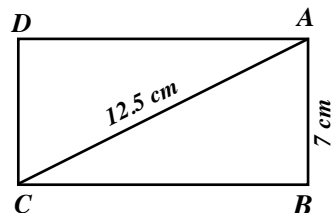
- 5** a) **Find the equation:**

of the straight line which cuts 4 unit from the positive part of Y- axis and parallel the straight line whose passes by two points  $(1, 4)$  and  $(3, -7)$ .

- [6]** ABCD is a rectangle where  $AB = 7$  cm,  $AC = 12.5$  cm.

**Find:** a)  $m(\angle ACB)$

- b) The area of rectangle ABCD.





## (6) Gharbia

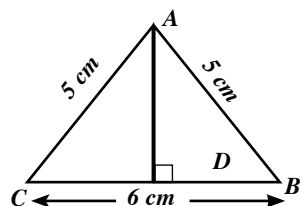
### 1 Choose the correct answer from those between brackets:

- a) The midpoint of  $\overline{AB}$  where A (0, 6), B (4, 0) is .....  
 (4 , 6) or (6 , 4) or (2 , 3) or (3 , 2)
- b) The slope of straight line whose equation is  $Y = 5 - 3X$  is .....  
 (5 or -3 or  $\frac{5}{3}$  or  $\frac{3}{5}$ )
- c) The If A(-1, 5), B(5, -3), then the midpoint of  $\overline{AB}$  is .....  
 [(1, 2), (-1, -2), (2, 1), (-2, 1)]
- d) The points (-1, 0), (0, 1), (1, 2) are .....  
 [collinear, form right-angled triangle, not collinear, form an obtuse triangle]
- e) If  $\overline{LM} \perp \overline{HO}$ , H(-1, 2), O(0, 0), then slope  $\overleftrightarrow{LM} = \dots\dots\dots$   
 a) -2                      b)  $-\frac{1}{2}$                       c)  $\frac{1}{2}$                       d) 2
- f)  $\cos (x + 20^\circ) = \frac{1}{2}$  where x is an acute angle, then m ( $\angle x$ ) equals .....°  
 (10 or 25 or 40 or 60)

### 2 Complete:

- a)  $\sin 60^\circ + \cos 30^\circ - \tan 60^\circ = \dots\dots\dots$
- b) The distance between the point (-3 , 4) and the point of origin = .....
- c) If two lines have equal slopes, then the two lines are .....
- d) If  $2 \sin A = 1$ , then m ( $\angle A$ ) = .....
- e)  $\cos 45 = \sin \dots\dots\dots$
- f) **In the opposite figure:**

$\cos B = \dots\dots\dots$



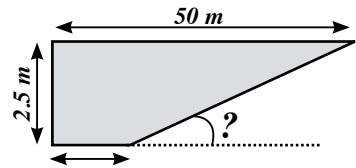
- 3 a) XYZ is a right-angled triangle at Y, where XY = 5 cm, XZ = 13 cm.

**Find** the value of:

- 1)  $\tan X \times \tan Z$                       2)  $\sin^2 Z + \sin^2 X$

- b) Find the equation of the straight line passing through the point (3, -5) and perpendicular to the straight line  $X + 2Y - 7 = 0$ .

- 4 a) The opposite figure shows the cross section of a swimming pool. What angle does the slopping bottom make with the horizontal?



- b) **Find** the equation of the straight line which cuts 3 units from the positive part of y - axis and make an angle of a measure  $45^\circ$  in the positive direction to the X-axis.

- 5 a) If the distance between the two points (a , 7) , (0 , 3) equals 5.

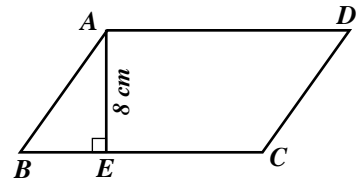
**Find** the value of a.

- b) In the opposite figure:

ABCD is a parallelogram of S.A  $96 \text{ cm}^2$ ,

$BE : EC = 1 : 3$

$\overline{AE} \perp \overline{BC}$  and  $AE = 8 \text{ cm}$ .



**Find:**

**First:** The length of  $\overline{AD}$

**Second:**  $m(\angle B)$

**Third:** The length of  $\overline{AB}$  to nearest decimal number (Use more than one way)

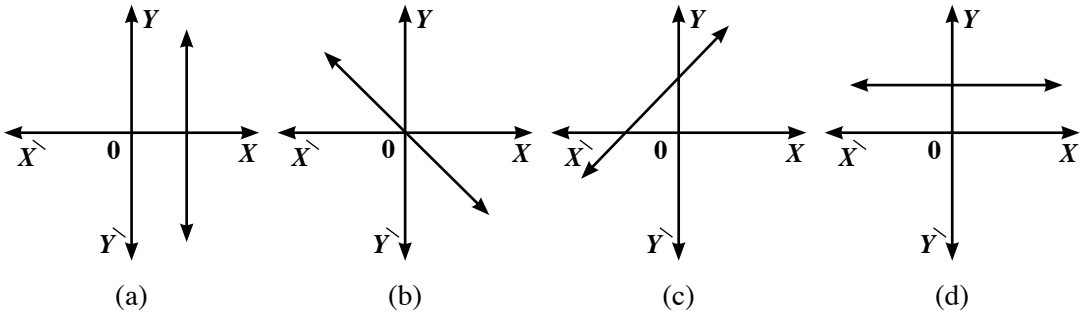
## (7) Dakahlia

### 1 Complete:

- 1) If A (1 , 2), B (3 , 4) , then the mid point of  $\overline{AB}$  is .....
- 2) The slope of S.T line perpendicular on  $3x + 4y - 9 = 0$  is .....
- 3) ABC is isosceles right angled at B, then  $\tan A = \dots\dots\dots$
- 4)  $\cos 45^\circ = \sin \dots\dots\dots$
- 5) If  $L_1 \perp L_2$ , the slope of  $L_1 = 7$ , then the slope of  $L_2 = \dots\dots\dots$
- 6)  $4 \cos 30^\circ \tan 60^\circ = \dots\dots\dots$

## 2 Choose:

1) The figure that represents a line of +ve. slope .....



2) If  $\tan \frac{1}{2} x^\circ = \frac{1}{\sqrt{3}}$  where  $x$  is +ve acute angle, then  $m(\hat{x}) = \dots\dots\dots^\circ$ .

- a) 30                      b) 60                      c) 90                      d) 45

3) A circle its center is the origin point and radius length 2 units. Which of the following points belongs to the circle?

- a) (1, 2)                      b) (-2, 1)                      c) ( $\sqrt{3}$ , 1)                      d) ( $\sqrt{2}$ , 1)

4) S. A of triangle determined by s.t lines  $x = 0$ ,  $4 = 0$   $2x + 3y = 6$  equals .....

- a) 6                      b) 5                      c) 4                      d) 3

5) The point ..... belongs to the circle with centre origin and radius length 3 units.

- a) (1, 2)                      b) ( $\sqrt{5}$ , -2)                      c) ( $\sqrt{2}$ , 1)                      d) ( $\sqrt{3}$ , 1)

6)  $\tan 75^\circ = \dots\dots\dots$

- a)  $\frac{\tan 75^\circ}{\sin 75^\circ}$                       b)  $\frac{\sin 75^\circ}{\cos 75^\circ}$                       c)  $3 \tan 25^\circ$                       d)  $3 \sin 25^\circ \cos 25^\circ$

3 a) ABC is right-angled triangle at A, AC = 15 cm, AB = 20 cm

prove that  $\cos B \cos C - \sin B \sin C = 0$

b) Find equation of S. T line passes through (4, 2), (-2, -1), then prove that it passes through origin point.

4 a) Find equation of line of symmetry of  $\overline{XY}$  where X (3, -2), Y (-5, 6)

b) ABC is a right-angled  $\triangle$  at C, AB = 13 cm, BC = 12 cm. Find the length of  $\overline{AC}$ , then find each of the following: Sin A, Cos B, Tan A.

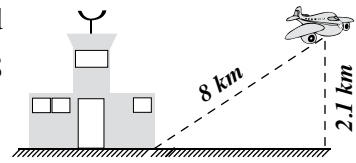
5 a) ABCD is A (3, -1), B (6, 2), C (1, 1) find

1. H. point of intersection of diagonals

2. Coordinates of vertex D

3. Length of  $\overline{DH}$

- b) A plane, which took off from Cairo Airport, had gained an altitude of 2.1 km after it had travelled 8 km. At what angle was this plane climbing?



## (8) Kafr El-Sheikh

### 1 Choose the correct answer:

- a) If  $\sin(2x) = \frac{1}{2}$  then = ..... (10° or 15° or 20° or 30°)
- b) If A (1, 5), B (3, -1), then the midpoint of  $\overline{AB}$  is .....  
( (1, 1) or (2, 2) or (-1, 1) or (2, -2) )
- c) The slope of a straight line = 1 then it makes with the positive direction of X – axis an angle of measure ..... (30° or 35° or 40° or 45°)
- d) If  $\sin X = \cos 60^\circ$ , where X is an acute angle, then  $m(\angle X) = \dots\dots\dots$   
a) 60°                      b) 45°                      c) 30°                      d) 15°
- e) If A (3, 1), B (6, 5) are two points then the length of  $\overline{AB} = \dots\dots\dots$  unit.  
( $\sqrt{5}$  or 3 or  $\sqrt{12}$  or 5)
- f) The slope of the straight line which is parallel to x-axis = .....  
a) 1                      b) -1                      c) 0                      d) undefined

### 2 Complete the following:

- a) The distance between the two points (0, 9) and (4, 0) equals .....
- b)  $\sin 30^\circ + \cos 60^\circ - \tan 45^\circ = \dots\dots\dots$
- c) If the slope of a straight line =  $-\frac{2}{3}$ , then the slope of the straight line which is parallel to it = .....
- d) If  $\cos A = 0.6217$ , where A is an acute angle, then  $m(\angle A) = \dots\dots^\circ \dots\dots \dots\dots$
- e)  $\tan 45 \sin 30 = \dots\dots\dots$
- f) The straight line  $2y = 3x + 8$ , intercepts a part of length = ..... from the Y-axis

### 3 a) Find the slope and the intercepted part of y-axis for the straight line whose

equation is  $\frac{x}{2} + \frac{y}{3} = 1$

- b) Without using calculator prove that:

$$2 \sin 60^\circ \cos 30^\circ + \tan 60^\circ \tan 30^\circ + \sin^2 45^\circ = 3$$

4 a) Prove that  $\sin^2 30 = 9 \cos^3 60 - \tan^2 45$ .

b) **Prove that:** the point A (-3 , -1) , B (3 , 3) , C (6 , 5) are on one straight line.

5 a) ABC is right-angled triangle at C where A (-6 , 1) , B (X , 1) , C (2 , 5) then find the value of X

b) If the points A (1 , 0) , B (-1 , 4) , C (7 , 8) and D (a , 4) are collinear then prove that ABCD is a rectangle and find the length of its diagonal.

## (9) Behera

1 Choose the correct answer from the given ones:

1) If  $\tan (x + 10) = 1$  , then  $x = \dots\dots\dots$  (10 or 15 or 20 or 35)

2)  $4 \cos 30^\circ \tan 60^\circ = \dots\dots\dots$  (12 or 3 or 6 or  $2\sqrt{3}$ )

3) The slope of the straight line in which its equation  $3y = 9x - 15$  is  $\dots\dots\dots$  .  
(3 or 9 or - 5 or  $\frac{1}{3}$ )

4) The distance between the point (4 , 3) and the point of origin =  $\dots\dots\dots$  .  
(4 or 3 or 5 or 7)

5) If  $\sin X = \cos 60^\circ$ , where X is an acute angle, then  $m(\angle X) = \dots\dots\dots$

a)  $60^\circ$                       b)  $45^\circ$                       c)  $30^\circ$                       d)  $15^\circ$

6) If  $X = 2 \cos 60^\circ \sin 30^\circ$  then  $X = \dots\dots\dots$

a) undefined              b) 3                      c)  $\frac{1}{2}$                       d) 1

2 Complete the following:

1) If  $\cos x = \frac{1}{\sqrt{2}}$  where x is an acute angle, then  $m(\angle x) = \dots\dots\dots$  .

2) The mid - point of  $\overline{AB}$  where A (3, 1), B (1, -5) is the point  $\dots\dots\dots$  .

3) The straight line whose equation is  $2x + 3y - 6 = 0$  intersects a part from the Y-axis that is =  $\dots\dots\dots$  .

4) If M is the midpoint of  $\overline{AB}$  where A (5, -2), and  $M(\frac{3}{2}, \frac{-1}{2})$ , then the coordinates of point B are  $\dots\dots\dots$

e)  $\sqrt{3} \tan 60 + 2 \sin 30 + 4 \cos 60 = \dots\dots\dots$

f) If  $L_1 \parallel L_2$  and the slope of  $L_1 = 0.2$ , then the slope of  $L_2 = \dots\dots\dots$

- 3 a) XYZ is right angled triangle at Y, where  $XY = 5$  cm,  $XZ = 13$  cm

**Find the value of:**  $\sin X \cos Z + \cos X \sin Z$ .

- b) Prove that the triangle of the vertices A (1, 4), B (-1, -2), C (2, -3) is a right angle, find its surface area.

- 4 a) A ladder  $\overline{AB}$  of length 6 m, its upper edge A lies on a vertical wall and its other edge B on a horizontal floor. If C is the projection of point A on the surface of the floor and its angle of slope on the surface of the floor was  $60^\circ$ , find the length of  $\overline{AC}$ .

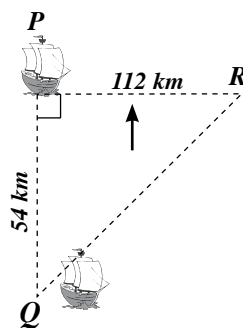
- b) Find the equation of the straight line passing through the point (1,2) and perpendicular on the straight line passing through the two points a (2, -3), b (5, -4).

- 5 a) ABCD is a quadrilateral where A (3 , 3), B (1, -1)

C ( -3, -3), D (-1 , 1). Prove that: ABCD is rhombus.

- b) Two yachts sail into a harbour at R. One yacht sails from P, which is 112 km west of R. The other sails from Q, which is 54 km south of P.

- a) Find the distance from Q to R.  
b) Find the sizes of angles PRQ and PQR.



## (10) Damietta

- 1 Choose the correct answer from the given answers:

- (1) The distance between the two points (3, -1), (-1, 2) = .....

(a) 2                      (b) 3                      (c) 4                      (d) 5

- (2) If  $\sin x = \sin 45^\circ \cos 45^\circ$  where X is an acute angle then  $m(\angle X) = \dots\dots\dots$

(a)  $30^\circ$                       (b)  $45^\circ$                       (c)  $60^\circ$                       (d)  $90^\circ$

- (3) The Slope of the straight line which make positive angle with the positive direction of the X-axis of measure  $30^\circ = \dots\dots\dots$

(a)  $\sqrt{3}$                       (b) 1                      (c)  $\frac{1}{\sqrt{3}}$                       (d)  $\frac{1}{2}$

(4) The straight line whose equation  $3y = 2x + 6$  cuts part from the Y-axis of length = ..... units.

- a) -6                      b) -2                      c)  $\frac{2}{3}$                       d) 2

(5) The slope of the straight line which is parallel to x-axis = .....

- a) 1                      b) -1                      c) 0                      d) undefined

(6) If  $X = 2 \cos 60^\circ \sin 30^\circ$  then  $X = \dots\dots\dots$

- a) undefined                      b) 3                      c)  $\frac{1}{2}$                       d) 1

## 2 Complete to make the following statements correct:

- 1- The product of two slopes of two perpendicular straight lines = ..... .
- 2- If C (2 , 1) is the midpoint of AB such that A (x , 4) , B (0, -2) then x = ..... .
- 3- If AB = 6 cm, then the surface area of the smallest circle passing through the two points A, B= .....  $\pi \text{ cm}^2$ .
- 4- If  $\cos (X + 20^\circ) = \frac{1}{2}$  where X is an acute angle , then x = ..... °
- 5- If  $\triangle XYZ$  is an right angled triangle at B, then  $\sin Z = \dots\dots\dots$  .
- 6- The straight line passing the center of the circle and the midpoint of any chord of it is ..... .

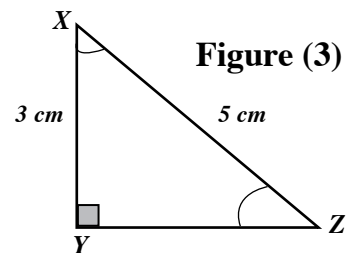
- 3 a) Find the equation of the straight line which intersects 3 units from the negative part of Y-axis and parallel to the straight line whose equation is  $3x - 5y = 4$

b) In figure (3):

In  $\triangle XYZ$  :  $XY = 3 \text{ cm}$ ,  $XZ = 5 \text{ cm}$ ,  $m(\angle Y) = 90^\circ$

Find the value of:

1.  $\sin^2 X - \cos^2 Z$
2.  $\frac{3}{4} \tan X + \frac{4}{3} \tan Z$



- 4 a) If  $L_2 \parallel L_1$  the straight line  $L_1$  passing through the two points A (2, 1), B (3, k) and the straight line  $L_2$  makes angle of measure  $45^\circ$  with the positive direction of the X-axis

1. Find value of k.
2. Find AB.

b) ABCD is a trapezium, where  $\overline{AD} \parallel \overline{BC}$  ,  $m(\angle B) = 90^\circ$ ,  $AB = 3 \text{ cm}$ ,  $AD = 6 \text{ cm}$ ,  $BC = 10 \text{ cm}$ .



**Prove that:**  $\cos(\angle DCB) - \tan(\angle ACB) = \frac{1}{2}$

**5** a) Prove that the triangle whose vertices A (3 , 5) , B (4 , 2) , C (-5 , -1) is right at B.

b) A ladder  $\overline{AB}$  of length 6 m, its upper edge A lies on a vertical wall and its other edge B on a horizontal floor. If C is the projection of point A on the surface of the floor and its angle of slope on the surface of the floor was  $60^\circ$ , find the length of  $\overline{AC}$ .

## (11) Port Said

**1** Complete the following statements:

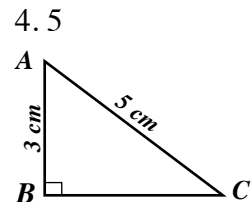
- a) If two lines are parallel, then their slopes are .....
- b)  $\cos 60^\circ = \dots\dots\dots$
- c) (Sine) any angle equals (Cosine) the ..... angle of this angle.
- d) The slope of the straight line which makes an angle of a measure  $65^\circ 25' 15''$  in the positive direction to the x - axis equals .....
- e) If  $\sin \frac{x}{2} = \frac{1}{2}$  where  $\frac{x}{2}$  is an acute angle then  $m(\angle x) = \dots\dots\dots$
- f) If a straight line is perpendicular to a diameter of a circle at one of its ends, then it is a .....

**2** Choose the correct answer from the given ones:

a)  $\sin 45 = \dots\dots\dots$   $(\frac{1}{2}, \frac{\sqrt{3}}{2}, 1, \frac{1}{\sqrt{2}})$

b) If the straight line  $\overleftrightarrow{AB}$  is parallel to X-axis,  
where A (8, 5), B (2, K), then K= .....  
1. 1                      2. 3                      3. 4                      4. 5

c) In the opposite figure:  
 $\tan A \times \tan C = \dots\dots\dots$



d) If  $\sin E = 2 \sin 30^\circ \cos 30^\circ \tan 30^\circ$  where E is an acute angle, then  $m(\angle E) = \dots\dots\dots$   
1)  $90^\circ$                       2)  $60^\circ$                       3)  $45^\circ$                       4)  $30^\circ$

e) If the point of the origin is the midpoint of a straight

segment  $\overline{AB}$ , Where A (5, -2) then the coordinates of the point B are .....

- 1) (5, 2)      2) (2, 5)      3) (-5, 2)      4) (2, -5)

**3 a)** If a triangle with vertices A (4, 2), B (3, 5), and C (-5, K) is right angle at A. then find the value of K.

b) A B C is a right angle triangle at B. in which  $5 AB = 3 AC$

**Prove that:**  $\cos A \cos C - \sin A \sin C = \text{Zero}$

**4 a) Without using calculators:**

If  $2 \sin A = \sin 30 \cos 60 + \cos 30 \sin 60$ . **Find**  $m(\angle A)$  where A is an acute angle.

b) Find the equation of a straight line which cuts a part of length 3 units from the negative part of the y - axis and perpendicular on the straight line passing through the two points A (0, 4), B (6, -2)

**5 a) Prove that** the points A (5, 4), B (0, 4) and C (8, 8) are the vertices of an isosceles triangle of vertex A, then find the length of the drawn straight segment from A perpendicular on B C.

## (12) Suez

**1 Complete:**

a)  $\cos 45^\circ = \dots\dots\dots$

b) Find the slope of a straight line which passes through the points (2, 0), (2, -1) = .....

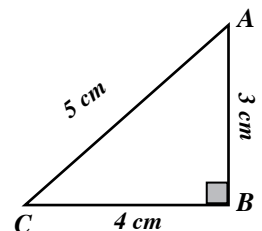
c) **In the figure opposite:**  $\sin C = \dots\dots\dots$

d) The distance between the point (-5, 12) and the point of origin equals .....

e) If  $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$

and the slope of  $\overleftrightarrow{AB} = \frac{1}{3}$

then the slope of  $\overleftrightarrow{CD}$  equals .....



f) If  $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$  slope of  $\overleftrightarrow{AB}$  equals  $\frac{1}{2}$ , then the slope of  $\overleftrightarrow{CD}$  equals .....

**2 Choose the correct answer:**

- 1) If  $\tan x = 1$ , then  $m(\angle x) = \dots\dots\dots$  .  
 a) 1                              b)  $45^\circ$                               c)  $30^\circ$                               d)  $60^\circ$
- 2) If  $m_1$  and  $m_2$  are two slopes of two perpendicular lines, then .....  
 a)  $m_1 - m_2 = 0$       b)  $m_1 + m_2 = 0$       c)  $m_1 \times m_2 = -1$       d)  $m_1 - m_2 = \pm 1$
- 3)  $\sin 30^\circ + \cos 60^\circ = \dots\dots\dots$  .  
 a) 1                              b)  $\frac{1}{2}$                               c)  $\frac{1}{4}$                               d) 0
- 4) The distance between the two points  $(-6, 0)$ ,  $(0, 8)$  equals .....  
 a) 2                              b) 5                              c) 14                              d) 10
- 5) If the two straight lines  $Y = \frac{1}{2}X + 1$  and  $Y = kx + 2$  are both parallel, then k equals .....  
 $(-\frac{1}{2}, \frac{1}{2}, -2, 2)$
- 6) If  $\sin(X + 5)^\circ = \frac{1}{2}$ , then  $m(\angle X) = \dots\dots\dots$   
 a)  $25^\circ$                               b)  $5^\circ$                               c)  $10^\circ$                               d)  $30^\circ$

**3 a) Find** the equation of the straight line perpendicular to  $\overline{AB}$  from its midpoint C  
 Where A (0 , 2) and B (-2 , 0)

b) If the ratio between two measures of supplementary angles as a ratio 3 : 5.

**Find** the value of each one by circular measure.

**4 a) If** A (-2 , 5) , B (3 , 3), C (-4 , 2) and D (-9 , 4) are four points in perpendicular coordinates plane.

**Prove that:**  $\overline{AC}$  and  $\overline{BD}$  bisect each other, then identify the type of the figure.

**b) Prove that:**  $\tan^2 60^\circ - \tan^2 45^\circ = \sin^2 60^\circ + \cos^2 60^\circ + 2 \sin 30^\circ$

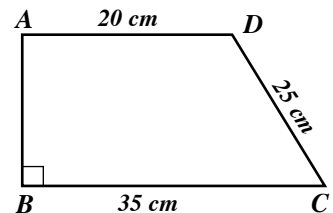
**5 a) Prove that:** the triangle whose vertices are:

A (1 , 4), B (-1, -2), C (2 , -3) is right angled in B.

b) A trapezoid shaped piece of land ABCD in which  $\overline{AD} \parallel \overline{BC}$ ,  $m(\angle B) = 90^\circ$ , AD = 20 meters, BC = 35 metres and DC = 25 m

**R.T.F:**

- i) Length of  $\overline{AB}$                               ii)  $m(\angle C)$



## (13) Fayoum

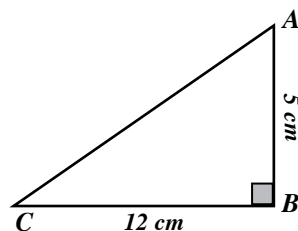
### 1 Choose the correct answer between brackets:

- a) The distance of point  $(2, -3)$  from X-axis ..... unit length.  $[2, -3, 3, \sqrt{3}]$
- b) The two straight lines whose slopes are  $\frac{3}{5}, \frac{-5}{3}$  are .....  
[parallel, perpendicular, congruent or not perpendicular]
- c) If  $2 \sin X = \tan 60^\circ$  where X is an acute angle, then  $m(\angle X) = \dots\dots\dots$   
[  $60^\circ, 45^\circ, 30^\circ, 40^\circ$  ]
- d) If M is the midpoint of  $\overline{AB}$  and A  $(2, 7)$ , B  $(4, -1)$ , then the coordinates of point M are .....
- e)  $\cos 30^\circ = \dots\dots\dots$
- f)  $4 \cos 30^\circ \tan 60^\circ = \dots\dots\dots$  .  $[2\sqrt{3}, 3, 6, 12]$

### 2 Complete the following:

- a) The straight line whose slope equals 2 and intersects Y-axis at point  $(0, 3)$ , its equation is .....
- b)  $\tan 30^\circ = \dots\dots\dots$  .
- c)  $\sin 30^\circ + \cos 60^\circ - \tan 45^\circ = \dots\dots\dots$  .
- d) If the two straight lines  $X + Y = 5$ ,  $KX + 2Y = 0$  are parallel, then  $K = \dots\dots\dots$
- e) If the straight line L is a tangent to a circle whose diameter length is 8 cm then the straight line L is at a distance from its centre ..... cm.
- f) **In the opposite figure:**

ABC is right angled triangle at B  
where  $AB = 5 \text{ cm}$ ,  $BC = 12 \text{ cm}$  , then  
 $\sin A = \dots\dots\dots$  .



- 3 a)** Find the value of a, b which proves that point  $(2a - 3, a - b)$  are the midpoints of the straight segment whose ends are the two points  $(7, -1), (3, 7)$ .

- b)** Without using the pocket calculator find the value X where X is an acute angle

$$\cos X = \frac{\sin 60^\circ \sin 30^\circ}{\tan 45^\circ \sin 245^\circ}$$

- 4 a) The straight line  $L_1$  passes through the two points  $(3, 5)$ ,  $(2, 4)$  and the straight line  $L_2$  makes with the positive direction of the X-axis an angle whose measure is  $45^\circ$ .

**Prove that** the straight line  $L_1$  is parallel to the straight line  $L_2$ .

b)  $2 \cos^2 45^\circ - 1 = 1 - 2 \sin^2 45^\circ$

- 5 A) Find the equation of the straight line passing through the point  $(1, 2)$  and perpendicular to the straight line which passes through the two points  $(2, -3)$ ,  $(5, -4)$ .

B) ABC is an isosceles  $\triangle$  in which  $AB = AC = 12.6$  cm and  $m(\angle C) = 84^\circ 24'$ . Find the length of  $\overline{BC}$  to the nearest one decimal place.

## (14) Aswan

### 1 Choose the correct answer:

1) The midpoint of  $\overline{OB}$  where O  $(0, 0)$  and B  $(-4, 2)$  is the point  $(\dots\dots, \dots\dots)$

- a)  $(-2, 1)$                       b)  $(2, -1)$                       c)  $(-2, 0)$                       d)  $(2, -4)$

2)  $2 \sin 30 \cos 30 = \dots\dots\dots$

- a)  $\sin 60$                       b)  $\cos 60$                       c)  $\tan 60$                       d)  $\sin 60$

3) The slope of the straight line  $2y = 6x + 1$  is  $\dots\dots\dots$

- a)  $\frac{1}{3}$                       b) 3                      c) -3                      d)  $-\frac{1}{3}$

4) The distance between the point  $(4, -3)$  and x-axis =  $\dots\dots\dots$

- a) -3                      b) 3                      c) 4                      d) 5

5)  $\sin^2 45^\circ + \cos^2 45^\circ = \dots\dots\dots$

- a)  $2\sqrt{2}$                       b) zero                      c) -1                      d) 1

6) The equation of the straight line passing through the point  $(4, 9)$  and parallel to x-axis is  $\dots\dots\dots$

- a)  $x = 4$                       b)  $y = 9$                       c)  $x = -4$                       d)  $y = 9$

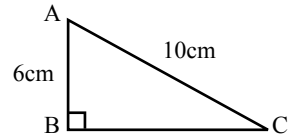
### 2 Complete the following statement:

a) The two straight lines whose slope  $\frac{2}{5}$ ,  $-\frac{5}{2}$  are  $\dots\dots\dots$

b)  $\tan 60 = \dots\dots\dots$

c) If  $\cos(x + 5) = \frac{\sqrt{3}}{2}$  where  $(x + 5)$  is an acute angle then,  $\tan(x + 20^\circ) = \dots\dots\dots$

d) In the opposite figure  $\sin C = \dots\dots\dots$  .



e) The slope of the straight line parallel to X-axis is  $\dots\dots\dots$

f)  $\sin 30 = \cos H$  where  $h$  is an acute angle then  $m(H) = \dots\dots\dots^\circ$

3 a) Prove that:  $\sin 60^\circ = 2 \sin 30^\circ \cos 30^\circ$

b) Show the type of the triangle if its vertices A  $(-2, 4)$  B  $(3, -1)$ , and C  $(4, 5)$  according to its sides.

4 a) Find the equation of the straight line which cuts 7 units from the positive part of y-axis and is parallel to the straight line whose slope equals  $\frac{1}{2}$ .

b) If the points  $(0,1)$  ,  $(A,3)$  ,  $(2,5)$  are collinear find A.

5 a) **Prove that:** the straight line whose equation  $2x + y + 8 = 0$  is perpendicular to the straight line passing through the points A  $(2, 3)$  and B  $(-2, 1)$

b) Find the value of  $x$  if  $\sin x = x \sin 60 \cos 30 - \cos 60 \sin 30$   
where  $0 < x < 90^\circ$



Subject  
Analytic  
geometry &  
trigonometry

Cairo Governorate  
Cairo Educational Directorate  
The Completion of the Basic education  
certificate Exam First term 2019 / 2020

Time:  
2 Hours

امتحان شهادة إتمام الدراسة لمرحلة التعليم الأساسي (عام) - الفصل الدراسي الأول ٢٠١٩ / ٢٠٢٠ م  
هندسة تحليلية وحساب المثلثات بالإنجليزية - الزمن : ساعتان

(Calculator is allowed)

يسمح باستخدام الآلة الحاسبة

Answer the following questions:

www.exam-eg.com

Question ( 1 ) : Choose the correct answer from those given answers:

- 1 If  $\sin X = \frac{1}{2}$ , where X is an acute angle, then  $X = \dots\dots^\circ$   
a) 30 b) 45 c) 60 d) 90
- 2 The straight line whose equation is  $y = 3x + 4$  intercepts from y-axis a part of ..... length unit  
a) 3 b) 4 c) 5 d) 7
- 3 The measure of the exterior angle of an equilateral triangle = .....  
a) 120 b) 90 c) 60 d) 30
- 4 If  $\triangle ABC \equiv \triangle XYZ$ , then  $AB = \dots\dots\dots$   
a) BC b) YZ c) XZ d) XY
- 5 The equation of the straight line whose slope equals 1 and passes through the origin point is .....  
a)  $Y = X + 1$  b)  $X = 1$  c)  $Y = 1$  d)  $Y = X$
- 6 The angle whose measure is  $30^\circ$  supplements an angle of measure .....  
a) 60 b) 120 c) 150 d) 180

( بقية الأسئلة في الصفحة المقابلة )

مركز الامتحان التعليمي



### Question ( 2 )

- a without using Calculator prove that :  
 $4 \sin 45^\circ \cos 45^\circ = 2$  ( showing the steps of the solution )
- b Find the equation of the straight line which passes through the point  $(1, 2)$  and parallel to the straight line whose equation is  $y = 3x + 5$

### Question ( 3 )

- a Find the value of  $x$  which satisfies that :  
 $x \sin 30^\circ = \sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$   $\leftarrow x=2$
- b Prove that the straight line which passes through the points  $(0, 5)$ ,  $(3, 2)$  is perpendicular to the straight line which makes an angle of measure  $45^\circ$  with the positive direction of X-axis.

### Question ( 4 )

- a ABCD is a parallelogram M is the point of intersection of its diagonals where , A  $(3, -1)$ , C  $(1, 7)$  Find: the coordinates of the point M.
- b IF A  $(2, 8)$ , B  $(-1, 4)$  and C  $(3, 1)$  are the vertices of the triangle ABC Prove that : - First : the triangle ABC is right angled triangle at B.  
Second : the triangle ABC is an isosceles triangle.

### Question ( 5 )

- a The triangle ABC is a right angled triangle at B where  $AB = 7\text{cm}$  and  $BC = 24\text{ cm}$ .  
Find the value of : - First :  $3 \tan A \times \tan C$   
Second :  $\sin^2 A + \sin^2 C$
- b If the points  $(0, 1)$ ,  $(a, 3)$  and  $(2, 5)$  are collinear Find the value of  $a$ .
- ( انتهت الأسئلة )



امتحان الفصل الدراسي الأول لشهادة إتمام الدراسة بمرحلة التعليم الأساسي ٢٠٢٠/٢٠١٩

المادة : الهندسة التحليلية وحساب المثلثات ( مترجم ) ( الإعدادية العامة ) الزمن : ساعتان

ملحوظة : أسئلة هذه المادة في أربع صفحات ( يسمح باستخدام الآلة الحاسبة )

Answer the following questions:First question: Choose the correct answer from those given:

(1) The product of multiplying the slopes of the two perpendicular straight lines = .....

( zero ☐ or 1 ☐ or -1 ☐ or  $\frac{1}{2}$  )(2)  $\overline{AB}$  is a diameter in a circle of center M, where

A (2, 4) and B (-2, 0) then M = .....

( (0, 2) ☐ or (2, 0) ☐ or (0, 0) ☐ or (2, 2) )

(3) The quadrilateral which its diagonals are equal in length and perpendicular is .....

( parallelogram ☐ or rhombus ☐ or rectangle ☐ or square )(4) If the lengths of two sides in a triangle are 2 cm and 5 cm then the length of the third side  $\in$  .....(  $]2, 5[$  ☐ or  $]3, 7[$  ☐ or  $]2, 7[$  ☐ or  $]3, 5[$  )

بقية الأسئلة بالصفحة الثانية

(5) In the opposite figure :

If  $m(\hat{BAC}) = 90^\circ$ ,  $\overline{AD} \perp \overline{BC}$ then  $(AD)^2 = \dots\dots\dots$ (  $AB \times AC$  ☐ or  $DB \times DC$  ☐ or  $BD \times BC$  ☐ or  $(AB)^2 + (BD)^2$  )(6) If  $\tan(x + 15) = 1$  where x is an acute angle then $m(\hat{x}) = \dots\dots\dots$ (  $60^\circ$  ☐ or  $45^\circ$  ☐ or  $30^\circ$  ☐ or  $15^\circ$  )Second question:

a) Find the area of the rectangle ABCD where A (-1, 3)

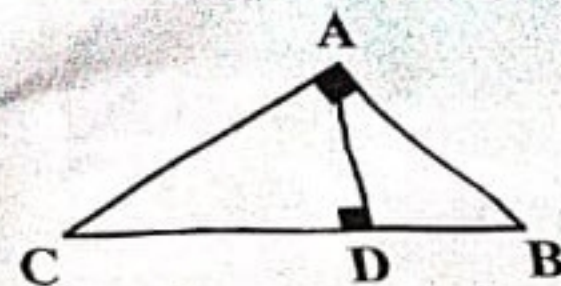
B (5, 1), C (6, 4) and D (0, 6)

b) Find the value of x if :

$$x \cos 60^\circ = \sin 30^\circ + \tan 45^\circ$$

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بقية الأسئلة بالصفحة الثالثة



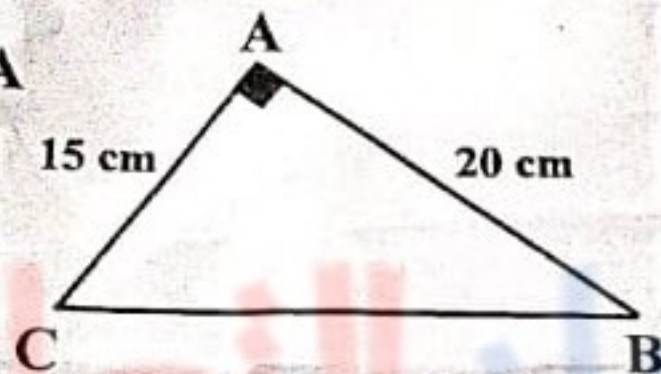


Third question:

- a) Prove that the straight line passing through the two points  $(-1, 0)$  and  $(3, 4)$  is parallel to the straight line that makes a positive angle of measure  $45^\circ$  with the positive direction of the  $x$ -axis.

b) In the opposite figure:

$ABC$  is a right angled triangle at  $A$ ,  $AB = 20$  cm and  $AC = 15$  cm



prove that :

$$\cos C \cos B - \sin C \sin B = \text{zero}$$

Fourth question :

- a) If  $C(x, -3)$  is the midpoint of  $\overline{AB}$  where  $A(-3, y)$ ,  $B(9, 11)$  find the value of  $x + y$
- b) Without using the calculator find the value of the expression

$$\sin 45^\circ \cos 45^\circ + 3 \sin 30^\circ \cos 60^\circ - \cos^2 30^\circ$$

بقية الأسئلة بالصفحة الرابعة

Fifth question:

- a) Find the equation of the straight line passing through the point  $(2, -5)$  and perpendicular to the straight line whose equation is  $y - 2x + 7 = \text{zero}$
- b) Prove that the points  $A(2, 3)$ ,  $B(6, 2)$ ,  $C(0, -1)$  and  $D(-2, 1)$  are vertices of a trapezoid.

انتهت الأسئلة

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١٩٥

**El Gharbia Governorate  
Tanta Educational Directorate  
Third Year Preparatory Examination  
( First Term, 2019 /2020)**

**Geometry**

**Time : 2 Hours**

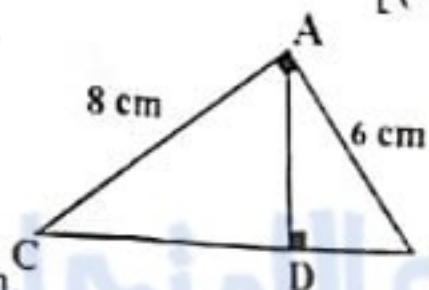
Repeated answers to the multiple choice question will not estimate and estimate the first answer only

"يسمح باستخدام الآلة الحاسبة"

Answer the following questions

Choose the correct answer in brackets:

- 1
  - a The number of axes of symmetry to the Scalene triangle equals ..... [ zero , 1 , 2 , 3 ]
  - b In the triangle XYZ If :  $(YZ)^2 + (XZ)^2 < (XY)^2$  Then  $\angle Z$  is ..... [ Acute , Right , Obtuse , Straight ]
  - c If the distance between the two points  $(a,0)$  and  $(0,1)$  is one length unit then  $a = \dots\dots\dots$  [ 1 , -1 , 0 , 2 ]
  - d If the origin point is the midpoint of  $\overline{AB}$  where  $A(2,-3)$  then the point B is ..... [  $(-3,2)$ ,  $(-2,3)$ ,  $(-2,-3)$ ,  $(2,3)$  ]
  - e In the figure : ABC is a right angled triangle at A in which  $\overline{AD} \perp \overline{BC}$  Cuts it in D,  $AB = 6$  cm. and  $AC = 8$  cm. then  $AD = \dots\dots\dots$  cm. [ 3.6 , 8.4 , 4.8 , 6.4 ]
  - f ABC is a right angled triangle at B then :  $\sin A + 2 \cos C = \dots\dots\dots$  [  $2 \sin C$ ,  $3 \sin A$ ,  $2 \sin A \cdot 3 \cos A$  ]



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- 2
  - a XYZ is a right angled triangle at Y in which :  $XY = 5$  cm. and  $XZ = 13$  cm. Find the value of :  $\cos X \cos Z - \sin X \sin Z$ .
  - b Find the measure of the positive angle that makes the straight line  $\overline{AB}$  where :  $A(3, -2)$ ,  $B(6, 1)$  with negative direction of the X - axis.
- 3
  - a Find the value of x if:  $\cos(3x + 6^\circ) = \frac{1}{2}$  where  $(3x + 6^\circ)$  is an acute angle
  - b Find the equation of the Straight line which parallel to the Straight line  $\frac{y-1}{x} = \frac{1}{3}$  and intersects negative part of y - axis equals 3 length Units.
- 4
  - a Find the value of x which satisfies :  $x - \sin 30^\circ \cos^2 45^\circ = \sin^2 60^\circ$ .
  - b If the points  $A(-3, 0)$ ,  $B(3, 4)$  and  $C(1, -6)$  are vertices of an isosceles triangle of vertex A, Find the length of the drawn straight segment from A and perpendicular on  $\overline{BC}$ .
- 5
  - a If the point  $M(-1, 2)$  is the center of the circle passing the point  $A(3, -1)$ , Find the circumference of the circle ( where  $\pi = \frac{22}{7}$  ).
  - b Find the equation of the Straight line passing the points  $(1, 2)$  and perpendicular to the straight line passing the two points  $A(2, -3)$  and  $B(5, -4)$ .

انتهت الأسئلة مع أطيب التمنيات بالتوفيق



(Calculator is allowed)

Answer the following questions:

Question (1): Choose the correct answer from those given answers

- If  $AB \perp CD$  and the slope of  $AB = \frac{1}{2}$ , then the slope of  $CD =$   
a) 2      b)  $\frac{1}{2}$       c)  $-\frac{1}{2}$       d) -2
- Number of symmetrical axis of an isosceles triangle =  
a) 1      b) 2      c) 3      d) 4
- $\tan 60^\circ \tan 30^\circ = \dots\dots\dots$   
a)  $\sin 30^\circ$       b)  $\tan 30^\circ$       c)  $\tan 45^\circ$       d)  $\tan 60^\circ$
- The sum of the measure of interior angles of the quadrilateral =  
a)  $540^\circ$       b)  $360^\circ$       c)  $180^\circ$       d)  $90^\circ$
- Equation of the straight line which passes through the point (2, 3) and parallel to X-axis is.....  
a)  $x = 2$       b)  $x = 3$       c)  $y = 2$       d)  $y = 3$
- Perimeter of the square which its surface area is  $100\text{cm}^2$  equal to.  
a) 10      b) 20      c) 40      d) 50

Question (2)

- If:  $x \sin 45^\circ \cos 45^\circ = \sin 30^\circ$ . Find value of  $x$ . (showing the steps of solution)  
(بقية الأسئلة في الصفحة المقابلة)

- Find the equation of the straight line, which its slope is 2 and passes through the point (1, 0).

Question (3):

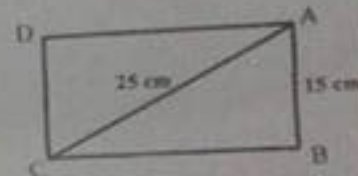
- XYZ is right angled triangle at Y in which  $XY = 6\text{ cm}$ ,  $YZ = 8\text{ cm}$ , find the value of:  $\cos X \cos Z - \sin X \sin Z$ .
- ABCD is a quadrilateral, where A (2, 4), B (-3, 0), C (-7, 5), D (-2, 9) prove that: the figure ABCD is a square.

Question (4):

- The opposite figure: ABCD is a rectangle,  $AB = 15\text{ cm}$ ,  $AC = 25\text{ cm}$

Find:

- Length of  $\overline{BC}$ .
- $m(\angle ACB)$ .
- Area of the rectangle ABCD.



- If C (6, -4) is the midpoint of  $\overline{AB}$  where A (5, -3) find coordinates of point B.

Question (5):

- If the straight line whose equation:  $ax + 2y - 7 = 0$  is parallel to the straight line which makes an angle  $45^\circ$  with the positive direction of X-axis, find the value of  $a$ .
- Find the equation of the straight line which passes through the two points (4, 2), (-2, -1).  
Then prove that: it passes through the origin point.

(انتهت الأسئلة)

الاسم : _____	الصف : _____	التاريخ : _____
الاسم : _____	الصف : _____	التاريخ : _____
الاسم : _____	الصف : _____	التاريخ : _____

### Answer the following questions

Question (1): Choose the correct answer from those given:

1) If  $\overline{AB} \parallel \overline{CD}$  and the slope of  $\overline{AB} = \frac{2}{3}$ , then the slope of  $\overline{CD} =$

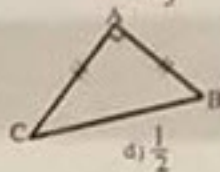
- a)  $\frac{3}{2}$       b)  $\frac{2}{3}$       c)  $-\frac{3}{2}$       d)  $-\frac{2}{3}$

2) In the opposite figure:

ABC is an isosceles triangle

and a right angle triangle at A, then  $\tan C =$  .....

- a)  $\frac{\sqrt{3}}{2}$       b)  $\frac{1}{\sqrt{3}}$       c) 1      d)  $\frac{1}{2}$



3) If A, B are two acute angles and  $m(\angle A) + m(\angle B) = 90^\circ$

$m(\angle A) \neq m(\angle B)$ , then .....

- a)  $\sin A = \cos B$       b)  $\sin A = \sin B$   
c)  $\tan A = \tan B$       d)  $\cos A = \cos B$

4) A circle of centre at the origin point and its radius length is 2 length unit, then the point belongs to it.

- a) (1, -2)      b) (-2,  $\sqrt{3}$ )      c) (0, 1)      d) ( $\sqrt{3}$ , 1)

5) If X, Y are two supplementary angles,

and  $m(\angle X) = (\angle Y)$  then  $m(\angle X) =$  .....

- a) 30      b) 45      c) 60      d) 90

6) The parallelogram which its diagonals are equal in length and are perpendicular is .....

- a) square      b) rhombus      c) rectangle      d) trapezium

### Question (2):

a) Find the value of x which satisfies:  $x \sin 30^\circ \cos^2 45^\circ = \sin^2 60^\circ$

b) ABCD is a parallelogram A(3, 2), B(4, -5), C(0, -3). Find the two coordinates of the point at which the two diagonals intersect, then find the coordinates of point D.

### Question (3):

a) Prove that points A(3, -1), B(-4, 6) and C(2, -2) are located in a circle whose centre is the point M(-1, 2), then Find the circumference of the circle. ( $\pi = 3.14$ )

b) Find the equation of the straight line which is perpendicular to the straight line whose equation:  $x + 2y + 5 = 0$  and intersects a positive part from Y-axis that is equals 7 units

### Question (4):

a) Prove that the straight line passing through two points (-3, -2), (4, 5) is parallel to the straight line that makes with the positive direction to the X-axis an angle of  $45^\circ$  measure.

b) ABC is a right-angled triangle at C, AC = 6 cm & BC = 8 cm

Find the value:  $\cos A \cos B - \sin A \sin B$

### Question (5):

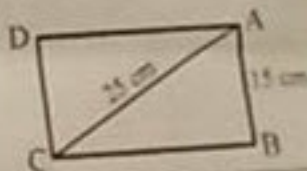
a) Let A(4, -6), B(3, 7) and C(1, -3). Find the equation of the straight line which passes through A and the mid-point of BC

b) In the opposite Figure ABCD is a rectangle

Where AB = 15 cm, AC = 25 cm

Find First:  $m(\angle ACB)$

Second: The surface area of the rectangle ABCD





1 (a) Choose the correct answer

- ① if  $\tan x = \frac{1}{\sqrt{2}}$  then where x is an acute angle, then

$\tan 2x = \dots\dots\dots$

- a)  $\frac{2}{\sqrt{2}}$       b)  $2\sqrt{3}$       c)  $\sqrt{3}$       d) 3

- ② The distance between the point (3, -5) and x-axis is ..... length unit

- a) -5      b) 3      c) 4      d) 5

- ③  $\tan 75^\circ = \dots\dots\dots$

- a)  $\frac{\cos 75^\circ}{\sin 75^\circ}$       b)  $\frac{\sin 75^\circ}{\cos 75^\circ}$       c)  $3 \tan 25^\circ$       d)  $3 \sin 25^\circ \cos 25^\circ$

2 (b) without using the calculator prove that

$\cos^2 60^\circ = 5 \sin^2 30^\circ - \tan^2 45^\circ$

3 (a) Choose the correct answer

- ① The area of the triangle bounded by the straight lines:  $3x-4y=12$ ,  $x=0$ ,  $y=0$  in square units equal.....

- a) 6      b) 7      c) 12      d) 15

- ② If The two straight lines:  $x+y=5$  and  $kx+2y=0$  are parallel then  $k= \dots\dots\dots$

- a) -2      b) -1      c) 1      d) 2

- ③ In  $\Delta ABC$ : if  $m(\angle B) = 90^\circ$  then  $\sin A + \cos C = \dots\dots\dots$

- a)  $2 \sin A$       b)  $2 \sin C$       c)  $2 \sin B$       d)  $2 \cos A$

4 (b) ABCD is a square in which: A(5,4) and C(-1,6)

Find the equation of  $\overline{BD}$

5 3 (a)  $\overline{AB}$  is a diameter of circle M, if B(8, 11), M(5,7)

Then find

- ① the coordinates of A      ② the length of the radius of the circle  
③ the equation of the perpendicular straight line to  $\overline{AB}$  from The point B

6 (b)  $\Delta ABC$  IS a right angled triangle at B in which  
 $AB = 6 \text{ cm}$ ,  $AC = 10 \text{ cm}$  find the value of  
 $\sin A \cdot \cos C = \cos A \cdot \sin C$

7 4 (a) prove that the points A(6,0), B(2,-4) and C(-4,2) Are the vertices of a right-angled triangle at B, then find its area

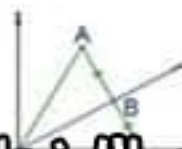
8 (b) if the two equations of two straight lines  $L_1$  and  $L_2$  respectively are:  $2x-3y+a=0$ ,  $3x+by-6=0$

- Find ① the value of b which makes  $L_1 \perp L_2$   
② the value of a if the point (1,3) lies on  $L_1$

9 5 (a)  $\Delta ABC$  IS a right angled triangle at B,  $2AB = \sqrt{3} AC$  Find the trigonometrical ratios of  $\angle C$

10 (b) in opposite figure  $\Delta ABC$  Is equilateral triangle,  $AB=BC$

find the equation of  $\overline{OB}$







1 (a) Choose the correct answer

① If the distance between the two points  $(a,0)$ ,  $(0,1)$  is unit length  
Then  $a = \dots\dots\dots$

- a) 1      b) 2      c) 3      d) 0

② if  $\tan(x - 5^\circ) = \frac{1}{\sqrt{3}}$  then where  $x - 5^\circ$  is an acute angle,  
then  $x = \dots\dots\dots$

- a)  $35^\circ$       b)  $65^\circ$       c)  $60^\circ$       d)  $30^\circ$

③ If: C  $(2,1)$  is the midpoint of  $\overline{AB}$  where B  $(3,0)$ , then A  
is  $\dots\dots\dots$

- a)  $(1,2)$       b)  $(2,1)$       c)  $(5,1)$       d)  $(1,5)$

2 (b) without using the calculator find the value of x if  
 $4x = \cos^2 30^\circ \tan^2 30^\circ \tan^2 45^\circ$

3 (a) Choose the correct answer

① The perpendicular distance between the two straight lines  
 $y-3=0$ ,  $y+2=0$ , equals  $\dots\dots\dots$

- a) 1      b) 2      c) 3      d) 5

② If The two straight lines :  $3x-4y=5$  and  $ky+4x=0$  are  
perpendicular then  $k = \dots\dots\dots$

- a) -4      b) -3      c) 3      d) 4

③ In  $\triangle ABC$  : if  $m(\angle A) = 60^\circ$ ,  $\sin C + \cos C$  then  $m(\angle B) = \dots$

- a)  $60^\circ$       b)  $30^\circ$       c)  $45^\circ$       d)  $75^\circ$

3 (b) ABCD is a quadrilateral where A  $(5,3)$ , B  $(6,-2)$ , C  $(1,-1)$   
and D  $(0,4)$  prove that ABCD is a rhombus, then find its area

4 (a) find the equation of the straight line which passes  
The two points  $(2,3)$ ,  $(-3,2)$

5 (b) In opposite figure

$\overline{AD} \perp \overline{BC}$ ,  $AD = 12$  cm

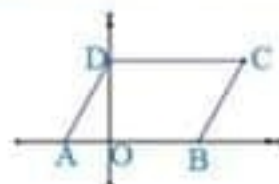
$\tan x + \tan y = \frac{5}{4}$  find the length of  $\overline{BC}$



4 (a) if A  $(3,1)$  and B  $(1,3)$  find the equation of axis of  
symmetry of  $\overline{AB}$

5 (b) if the distance between the two points  $(a,7)$ ,  $(3a-1,-5)$   
Equals 13 length unit find the value of a

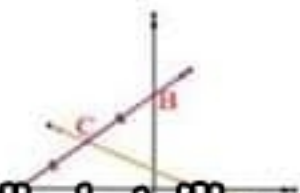
5 (a) In opposite figure  
ABCD is a parallelogram in which  
A  $(-3,0)$  and C  $(7,4)$   
Find the perimeter of the parallelogram  
ABCD



6 (b) In opposite figure

The equation of  $\overline{AB}$  is  $3y-2x=12$   
And C is the midpoint of  $\overline{AB}$  and  
D  $(2,0)$

FIND the equation of  $\overline{CD}$





Geometry



Model Exam 3

Full Mark in Maths



3<sup>rd</sup> preparatory - 1st term

1 (a) Choose the correct answer

- ① If  $m_1$  and  $m_2$  are two slopes of two parallel straight lines then.....  
 a)  $m_1 - m_2 = 0$    b)  $m_1 + m_2 = 0$    c)  $m_1 \cdot m_2 = 0$    d)  $m_1 - m_2 = 0$
- ② if  $\sin(x + 5^\circ) = \frac{1}{2}$  where  $x + 5^\circ$  is an acute angle, then  $\tan(x + 20^\circ)$  .....  
 a)  $\frac{\sqrt{3}}{2}$    b)  $\frac{1}{2}$    c)  $\frac{\sqrt{3}}{2}$    d) 1
- ③ if  $\cos B \times \tan B = \frac{1}{2}$  where B is an acute angle then  $m(\angle B) =$  .....  
 a)  $30^\circ$    b)  $45^\circ$    c)  $15^\circ$    d)  $75^\circ$

2 (b) ABC is a right-angled triangle at B,

$m(\angle A) = 2m(\angle C)$  Find the value of  $\cos^2 A + \tan^2 C$

3 (a) Choose the correct answer

- ① The perpendicular distance between the two straight lines  $x - 3 = 0$ ,  $x + 2 = 0$ , equals.....  
 a) 1   b) 2   c) 3   d) 5
- ② The straight line whose equation :  $2x + 5y - 10 = 0$  cuts from X-axis a part of length = ..... unit  
 a)  $\frac{2}{5}$    b) 2   c)  $\frac{3}{2}$    d) 5
- ③ if  $m(\angle A) = 75^\circ$ ,  $\sin B = \cos C$  where B is an acute angle then  $m(\angle B) =$  .....

4 (b) prove that ABC is an equilateral triangle where

A(6,0), B(2,0), and C(4,  $2\sqrt{3}$ ), then find its area.

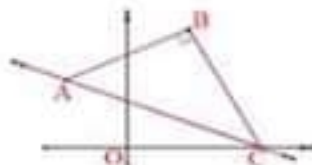
5 (a) without using the calculator prove that

$$\tan 60^\circ = \frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ}$$

6 (b) In opposite figure

A(-3,4), B(3,7),  $\overline{AB} \perp \overline{BC}$

Find the equation of  $\overline{AC}$ .



- 7 (a) find the equation of the straight line which passes Through the point (3, -5) and it is parallel to the straight Line  $x + 2y - 7 = 0$

8 (b) Find the slope and intercepted part of Y-axis of the straight line  $\frac{x}{4} + \frac{y}{3} = 1$

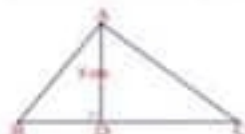
9 (a) In opposite figure

$\overline{AD} \perp \overline{BC}$ ,  $AD = 8$  cm

$\frac{1}{\tan B} + \frac{1}{\tan C} = \frac{3}{2}$  find the length of  $\overline{BC}$

10 (b) the opposite table represent a linear relation

- ① find the equation of the straight line  
 ② find the value of a



x	1	2	3
y = f(x)	1	3	a

Geometry

Full Mark in Maths

Model Exam 4

3<sup>rd</sup> preparatory - 1st term

1 (a) Choose the correct answer

- ① if  $\tan 3x = \sqrt{3}$  where  $3x$  is the measure of an acute angle,  $m(\angle x) = \dots\dots\dots$
- a)  $10^\circ$       b)  $20^\circ$       c)  $30^\circ$       d)  $60^\circ$
- ② The equation of the straight line which passes through the point  $(-2, 7)$ , parallel to Y-axis is  $\dots\dots\dots$
- a)  $x = -2$       b)  $x = 7$       c)  $y = -2$       d)  $y = 7$
- ③ If  $\overline{AB}$  is a diameter of circle, where  $A(3, -5)$ ,  $B(5, 1)$  then the centre of the circle is  $\dots\dots\dots$
- a)  $(4, -2)$       b)  $(4, 2)$       c)  $(2, 2)$       d)  $(8, -2)^{\circ}$

(b) without using the calculator prove that  
 $2\cos^2 30^\circ - 1 = 1 - 2\sin^2 30^\circ \tan^2 45^\circ$

2 (a) Choose the correct answer

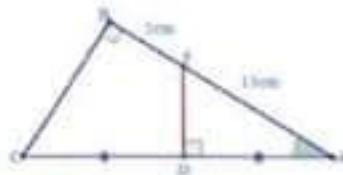
- ① The area of the triangle bounded by the straight lines:  $3x - 4y = 12$ ,  $x = 0$ ,  $y = 0$  in square units equal  $\dots\dots\dots$
- a) 6      b) 7      c) 12      d) 15
- ② If The two straight lines:  $x + y = 5$  and  $kx + 2y = 0$  are parallel then  $k = \dots\dots\dots$
- a) -2      b) -1      c) 1      d) 2
- ③ In  $\triangle ABC$ : if  $m(\angle B) = 90^\circ$  then  $\sin A + \cos C = \dots\dots\dots$
- a)  $2\sin A$       b)  $2\sin C$       c)  $2\sin B$       d)  $2\cos A$

(b) if  $\tan \theta \cdot \cos \theta = \frac{1}{2}$  which  $\theta$  is acute angle: find the value of  $\theta$

- 3 (a)  $\overline{AB}$  is a diameter of circle M, if  $B(8, 11)$ ,  $M(5, 7)$  Then find
- ① the coordinates of A      ② the length of the radius of the circle
- ③ the equation of the perpendicular straight line to  $\overline{AB}$  from The point B

(b) In opposite figure

$m(\angle B) = 90^\circ$ ,  $\overline{FD}$   
 $CD = AD$ ,  
 $BF = 5\text{cm}$ ,  $AF = 13\text{cm}$   
 Find  $\tan A$



- 4 (a) BY using the slope prove that the points  $A(-1, 3)$ ,  $B(5, 1)$ ,  $C(6, 4)$  and  $D(0, 6)$  are the vertices of a rectangle then find its area

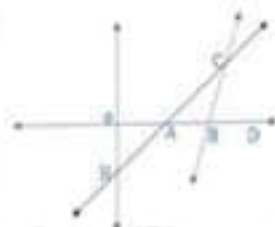
(b) if  $A(-1, 3)$  and  $(5, 1)$

Find the equation of the axis of symmetry of  $\overline{AB}$

- 5 (a) if  $\triangle ABC$  is a right-angled triangle at C Prove that  $\sin B + \cos B > 1$

(b) In opposite figure the slope of  $\overline{BC} = \sqrt{3}$  and the equation of  $\overline{BC}$  is  $x - y = 3$  find

- ① the slope of  $\overline{AC}$  and the length of  $\overline{OH}$
- ②  $m(\angle BCD)$ ,  $m(\angle CAD)$  and  $m(\angle ACB)$





Geometry



Model Exam 5

3<sup>rd</sup> preparatory - 1st term

Full Mark in Maths



Q1 (a) Choose the correct answer

- ① if  $\cos(x + 10) = \frac{1}{2}$  where  $x$  is the measure of an acute angle, then  $m(\angle x) =$  .....
- a)  $30^\circ$       b)  $40^\circ$       c)  $50^\circ$       d)  $70^\circ$
- ② The equation of the straight line which passes through the point  $(-2, 7)$ , parallel to x-axis is .....
- a)  $x = -2$       b)  $x = 7$       c)  $y = -2$       d)  $y = 7$
- ③ If  $ABCD$  is a Square, where  $A(3, 4)$ ,  $C(5, 6)$  then the slope of  $\overline{BD}$  is = .....
- a)  $-2$       b)  $-1$       c)  $1$       d)  $2$

Q2 (b) without using the calculator prove that

$$\sin^2 30^\circ = 9 \cos^2 - \tan^2 45^\circ$$

Q3 (a) Choose the correct answer

- ① The area of the triangle bounded by the straight lines:  $2x + 3y = 6$ ,  $x = 0$ ,  $y = 0$  in square units equal .....
- a) 2      b) 3      c) 6      d) 12
- ② If The two straight lines:  $x + y = 5$  and  $kx + 2y = 0$  are perpendicular then  $k =$  .....
- a)  $-2$       b)  $-1$       c)  $1$       d)  $2$
- ③ In  $\triangle ABC$ : if  $m(\angle A) : m(\angle B) : m(\angle C) = 3 : 4 : 5$  Then  $\cos B =$  .....
- a) 0      b)  $\frac{\sqrt{2}}{2}$       c) 1      d)  $\frac{1}{2}$

- Q4 (a) if  $ABCD$  is a rectangle, where  $A(1, 1)$ ,  $B(3, 3)$ ,  $C(0, -3x)$  and  $D(x, y)$  find the value of  $x$  and  $y$

Q5 (b) In opposite figure

- $m(\angle B) = m(\angle CHD) = 90$   
 $4 DH = 3 CH$ ,  $AB = 9$  cm  
 Find the Area of  $\triangle ABC$



- Q6 (a) prove that  $\triangle ABC$  is isosceles triangle where  $A(3, 3)$ ,  $B(5, 9)$ ,  $C(-1, 7)$  then find its area

Q7 (b) if  $A(-1, 3)$  and  $(5, 1)$

Find the equation of the axis of symmetry of  $\overline{AB}$

- Q8 (a) if  $\triangle ABC$  is a right-angled triangle at C

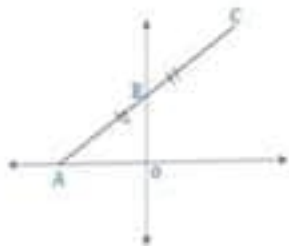
Prove that  $\sin B + \cos B > 1$

Q9 (b) In opposite figure

B is the midpoint of  $\overline{AC}$  and  $A(-4, 0)$  and  $B(0, 3)$

find

- ① the coordinates of the point C  
 ②  $\tan A$   
 ③ the equation of  $\overline{AC}$



تنبيه مهم: أسئلة المادة في أربع صفحات

يسمح باستخدام الآلة الحاسبة

Answer the following questions:

Question 1: choose the correct answer from this given:

[ 1 ]  $\sin^2 60^\circ + \cos^2 60^\circ = \dots$

[ 0 ,  $\frac{1}{4}$  ,  $\frac{1}{2}$  , 1 ]

[ 2 ] ABCD is a parallelogram in which  $m(\angle A) + m(\angle C) = 200^\circ$ Then  $m(\angle B) = \dots$ 

[ 80 , 50 , 100 , 160 ]

[ 3 ] In the figure opposite:

The equation of the straight line

L is  $\dots$ 

[  $X=1$  ,  $Y=-X$  ,  $Y=X$  ,  $Y=1$  ]

[ 4 ] If A, B are the measures of two complementary angles.

Where  $A : B = 1 : 2$  then  $m(\angle B) = \dots$ 

[ 180 , 90 , 30 , 60 ]

A : B : Sum  
1 : 2 : 3  
90

[ 5 ] The perpendicular distance between the straight lines

$X-2=0$  ,  $X+3=0$  equal  $\dots$

$X+2=0$

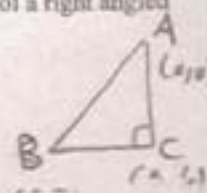
$X-4=0$

[ 1 , 5 , 2 , 3 ]

[ 6 ] If A (0,0) , B (5,7) , C (5,h) are the vertices of a right angled

triangle at C then  $h = \dots$ 

[ 0 , 5 , 7 , -5 ]



Question 2:

[ 1 ] Without using calculator prove that:

$2 \sin 30^\circ + 4 \cos 60^\circ = \tan^2 60^\circ$

[ 2 ] If A (-1,-1) , B (2,3) , C (6,0) , D (3,-4) are four points

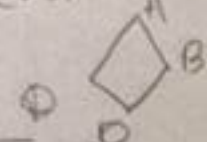
on an orthogonal Cartesian co-ordinates plane.

Prove that AC and BD bisect each other.

$$AB \sqrt{(-1-2)^2 + (-1-3)^2} = 5$$

$$BC \sqrt{(2-6)^2 + (3-0)^2} = 5 \quad CD \sqrt{(6-3)^2 + (0+4)^2} = 5$$

$$\sqrt{(-1-3)^2 + (-1-3)^2} = 5$$



**Question 3:**

[ 1 ] If  $\cos 3X = \frac{\sin 60^\circ \sin 30^\circ}{\tan 45^\circ \sin^2 45^\circ}$

Find the value of  $X$  where  $3X$  is an acute angle

[ 2 ] Find the equation of the straight line passing through the point  $(1, 2)$

and perpendicular on the straight line passing through the two points

$A(2, -3), B(5, -4)$ .

**Question 4:**

[ 1 ]  $ABC$  is right angled triangle at  $C$  where  $AB = 5 \text{ cm}, BC = 4 \text{ cm}$ .

Prove that :  $\sin A \cdot \cos B + \cos A \cdot \sin B = 1$

[ 2 ] Find the equation of the straight line when its slope is equal to slope of

the straight line  $\frac{Y-1}{X} = \frac{1}{3}$  and intersects a part from the negative

direction 3

**Question 5:**

[ 1 ]  $ABC$  is a triangle where  $A(0, 0), B(3, 4), C(-4, 3)$

Find the perimeter of  $\Delta ABC$

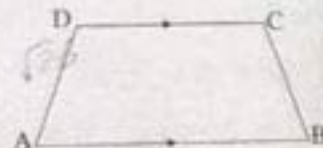
[ 2 ] In the opposite figure:

$ABCD$  is trapezoid ,  $\overline{AB} \parallel \overline{CD}$

$A(9, -2), B(3, 2),$

$C(-X, -X), D(4, -3)$

Find the coordinates of the points  $C$







Giza Governorate  
The Educational Directorate  
The Completion of Basic Education Certificate Exam  
First Term 2018/ 2019

امتحان - ٢٠١٨ - الفصل الأول



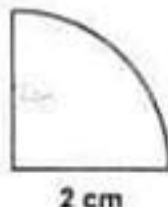
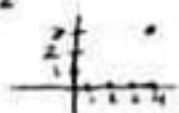
Geometry and Trigonometry

Time : 2 Hours

Answer the following questions

**First question** ⇨ Choose the correct answer:

- ① If  $\sin x = \frac{1}{2}$  where  $x$  is an acute angle then  $\sin 2x = \dots\dots\dots$
- a)  $\frac{1}{4}$                       b) 1                      c)  $\frac{1}{\sqrt{3}}$                       d)  $\frac{\sqrt{3}}{2}$
- ② The distance between the point  $(4, 3)$  and Y - axis = ..... length unit.
- a) -3                      b) -4                      c) 3                      d) 4
- ③ The points  $(8, 0)$ ,  $(0, 6)$ ,  $(0, 0)$  .....
- a) form a right angled triangle                      b) form an obtuse angled triangle  
c) form an acute angled triangle                      d) are collinear
- ④ If  $A(5, 7)$ ,  $B(1, -1)$  then the coordinates of the midpoint of AB is .....
- a)  $(2, 3)$                       b)  $(3, 3)$                       c)  $(3, 2)$                       d)  $(3, 4)$
- ⑤ The equation of the straight line which passes through the point  $(1, -3)$  and parallel to X - axis is .....
- a)  $x = 3$                       b)  $y = 1$                       c)  $y = -3$                       d)  $x = -3$
- ⑥ The opposite figure represent quarter a circle with radius 2 cm long then its perimeter = ..... cm.
- a)  $2\pi$   
b)  $5\pi$   
c)  $\pi + 4$   
d)  $4\pi + 4$



**Second question** ⇨

- (A) Find the equation of the straight line which its slope is 2 and passes through the point  $(1, -1)$ .
- (B) ABC is a right angled triangle at C in which  $AC = 3$  cm,  $BC = 4$  cm find: 1)  $\cos A \cos B - \sin A \sin B$   
2)  $m(\angle B)$

### Third question

(A) Without using calculator prove that:

$$\sin 60^\circ = 2 \sin 30^\circ \cos 30^\circ$$

(B) If the straight line  $L_1$  passes through the two points  $(3, 1)$ ,  $(2, k)$  and the straight line  $L_2$  makes with the positive direction to the  $X$ -axis an angle of measure  $45^\circ$ .

Find the value of  $k$  if  $L_1 \perp L_2$ .

### Fourth question

(A) If  $\cos E \tan 30^\circ = \cos^2 45^\circ$  then find  $m(\angle E)$

where  $E$  is an acute angle.

(B) Show the type of the triangle whose vertices the points  $A(3, 3)$ ,  $B(1, 5)$ ,  $C(1, 3)$  with respect to its side lengths.

### Fifth question

(A) Find the slope of the straight line  $5x + 4y + 10 = 0$

then find the length of the  $y$ -intercept.

(B) Prove that the points  $A(3, -1)$ ,  $B(-4, 6)$ ,  $C(2, -2)$  which belong to a perpendicular coordinates plan passing through the circle whose center is the point  $M(-1, 2)$ .

Then find the area of the circle.



توجيه هام : لن يعتد إلا بالإجابة الأولى فقط في الأسئلة الموضوعية

Answer the following questions.

( Using calculator is permitted )

(1) Choose the correct answer:

(1) If  $\cos(x + 15)^\circ = \frac{1}{2}$ , then  $\sin(75 - x)^\circ = \dots\dots\dots$

- (a)  $\frac{1}{2}$  (b)  $\frac{\sqrt{3}}{2}$  (c)  $\frac{1}{\sqrt{2}}$  (d) 1

(2) A circle is drawn inside a square where the circle touches its four sides . If the perimeter of the square 56 cm , then surface area of the circle = .....  $\text{cm}^2$ .

- (a)  $\frac{77}{2}$  (b) 77 (c) 112 (d) 154

(3) The number of sides of the regular polygon in which the measure of one of its interior angle is  $144^\circ = \dots\dots\dots$  sides .

- (a) 7 (b) 8 (c) 9 (d) 10

(4) An isosceles triangle, the length of sides may be 4 cm , 9 cm , .....cm.

- (a) 4 (b) 9 (c) 13 (d) 36

(5) The distance between the point (-2,-3) and x - axis ..... Length unit .

- (a) 2 (b) 3 (c) -2 (d) -3

(6) The equation of the straight line which its slope =  $\frac{1}{2}$  and cuts the y - axis at the point ( 0,3) is.....

- (a)  $2y = \frac{1}{2}x + 6$  (b)  $y = \frac{1}{2}x$  (c)  $y = \frac{1}{2}x + 3$  (d)  $2y = \frac{1}{2}x + 3$  .

(2) (a) Without using calculator Find : the numerical value of the expression:

$$\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ - \tan^2 45^\circ .$$

(b)  $\overline{AB}$  is a diameter in circle M if A(7,-3) and B(5,1) where ( $\pi = 3.14$ )

Find: (1) The surface area of the circle .

(2) The coordinates of the center of circle M .



(3) (a) ABC is a right-angled triangle at A,  $AB = 5$  cm and  $BC = 13$  cm.

find the numerical value of the expression :  $\sin C \cos B + \cos C \sin B$

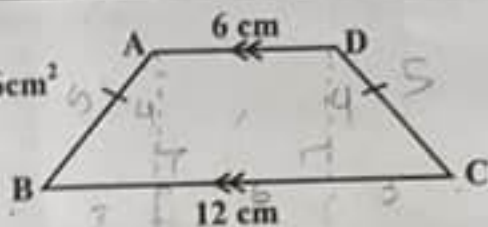
(b) Find the equation of straight line which passes through the point (1,3) and Perpendicular to the straight line passes through by the two points (5,0) and (2,1).

(4) (a) In the opposite figure :

ABCD is an isosceles trapezium, its area =  $36 \text{ cm}^2$

,  $\overline{AD} \parallel \overline{BC}$ ,  $AD = 6$  cm and  $BC = 12$  cm

find the value :  $\sin B + \cos C$



(b) Show the type of a triangle ABC according to its measure angles.

If its vertices A (-1,3), B (5,1) and C (6,4).

(5) (a) Find the slope of the straight line and length of the intercept part from y-axis whose its equation is:  $4x + 5y - 10 = 0$

(b) In the opposite figure:

The straight line  $\overleftrightarrow{CD}$

passes through by

the two points A (3,2), B (-3,6)

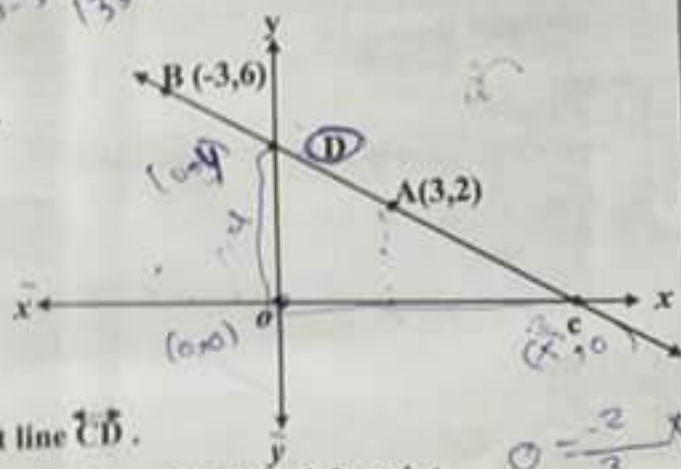
and cuts the two axes at

C and D respectively.

Find with the proof :

(1) The equation of the straight line  $\overleftrightarrow{CD}$ .

(2) The area of the triangle DOC where O is the origin point.





## امتحان الفصل الدراسي الأول للإعدادية العامة لعام ٢٠١٨ م

Answer all the following questions

**Q①:** Choose the correct answer from those given :

- 1) If  $\sin 70^\circ = \cos X$ , where  $X$  is the measure of an acute angle, then  $X = \dots\dots^\circ$   
a) 60                      b) 45                      c) 10                      d) 20
- 2) The slope of the straight line which is parallel to the X-axis equals .....  
a) -1                      b) zero                      c) 1                      d) undefined
- 3) If the slope of the straight line:  $ax - y + 3 = 0$  equals 2, then  $a = \dots\dots\dots$   
a)  $-\frac{1}{3}$                       b) -2                      c)  $\frac{1}{3}$                       d) 2
- 4) The distance between the point  $(4, -3)$  and the origin point = .....  
a) 7                      b) 5                      c) 3                      d) 4
- 5) The perpendicular distance between the two straight lines:  $y - 3 = 0$ ,  
 $y + 2 = 0$  equal ..... a) 1                      b) 2                      c) 3                      d) 5
- 6) The straight lines whose equation is:  $2x - 3y - 6 = 0$  intersects from the  
y-axis a part of length .... a) -6                      b) -2                      c)  $\frac{2}{3}$                       d) 2

**Q②:** a) Without using the calculator, find the numerical value of the expression:

$$\tan^2 60^\circ - \tan^2 45^\circ - 4\sin 30^\circ$$

b) Prove that: the points  $A(3, -1)$ ,  $B(-4, 6)$ ,  $C(2, -2)$  are located on a circle whose center is a point  $M(-1, 2)$ , then find the perimeter of the circle.

**Q③:** a) In the opposite figure:  $ABC$  is a triangle, in which

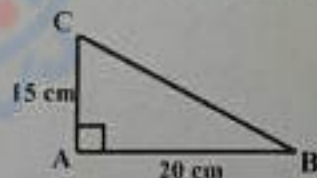
$$m(\hat{A}) = 90^\circ, AC = 15 \text{ cm}, AB = 20 \text{ cm}$$

Prove that:  $\cos C \cos B - \sin C \sin B = 0$

b) Find the equation of straight line

which passes through the point  $(1, 6)$  and the

midpoint of  $\overline{AB}$  where  $A(1, -2)$ ,  $B(3, -4)$



**Q④:** a)  $ABC$  is an isosceles triangle in which  $AB=AC=8 \text{ cm}$ ,  $BC=12 \text{ cm}$ ,

and  $\overline{AD} \perp \overline{BC}$  Find : 1)  $m(\hat{B})$                       2) The surface area of  $\Delta ABC$

b) If the point  $C(6, -4)$  is a midpoint of  $\overline{AB}$  where  $A(5, -3)$

Find the coordinates of the point  $B$

**Q⑤:** a) Find the equation of the straight line which passes through the point

$(3, -5)$  and parallel to the straight line:  $x + 2y = 7$

b) IF the straight line passes through the two points  $(a, 0)$  and  $(0, 3)$  and the straight line makes an angle of measure  $30^\circ$  with the positive direction of the X-axis are perpendicular, find the value of  $a$

( Good luck )





The Completion of Basic Education Certificate Exam " General and Governmental "

امتحان الهندسة وحساب المثلثات ( لغات )

الفصل الدراسي الأول ٢٠١٧ - ٢٠١٨ م شهادة إتمام الدراسة بمرحلة التعليم الأساسي الإعدادي العام والرسمي لغات الخاص

لاحظ أن أسئلة هذه المادة هي صفحتين

(Q<sub>1</sub>) Choose the correct answer from those given:

- 1)  $\tan 45^\circ \cos 60^\circ =$  \_\_\_\_\_  
 a) 1                      b)  $\frac{\sqrt{3}}{2}$                       c)  $\frac{1}{\sqrt{2}}$                       d)  $\frac{1}{2}$
- 2) If  $\sin x = \frac{1}{2}$ , where  $x$  is a acute angle, then  $m(\angle x) =$  \_\_\_\_\_  
 a)  $30^\circ$                       b)  $45^\circ$                       c)  $60^\circ$                       d)  $180^\circ$
- 3) The distance between the two points  $(0, 0)$ ,  $(5, 12)$  is \_\_\_\_\_  
 a) 5                      b) 13                      c) 12                      d) 17
- 4) If  $A(3, -4)$ ,  $B(5, -2)$ ,  $C$  is midpoint of  $\overline{AB}$ ,  
 then the coordinate of  $C =$  \_\_\_\_\_  
 a)  $(8, -6)$                       b)  $(1, 1)$                       c)  $(4, -3)$                       d)  $(-1, -1)$
- 5) If The two straight lines  $x + y = 5$ ,  $kx + 2y = 0$  are perpendicular  
 then  $k =$  \_\_\_\_\_  
 a) -2                      b) -1                      c) 1                      d) 2
- 6) The equation of the straight line which slope equal 1  
 and passes the origin is  $(0, 0)$   
 a)  $x = 1$                       b)  $y = 1$                       c)  $y = x$                       d)  $y = -x$

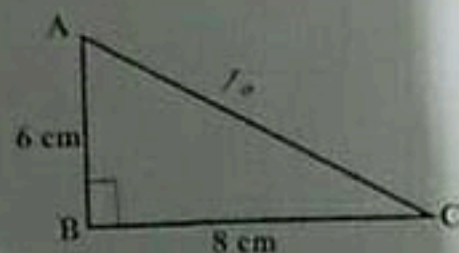
(Q<sub>2</sub>)

(a)  $ABC$  is a right-angled triangle at  $B$ ,

$AB = 6 \text{ cm}$ ,  $BC = 8 \text{ cm}$

Prove that :

$$\cos A \cos C - \sin A \sin C = \text{Zero}$$



(b) Prove that :  $\cos 60^\circ = 2 \cos^2 30^\circ - \tan 45^\circ$

تابع امتحان مادة الهندسة وحساب المثلثات ( لغات ) - الفصل الدراسي الأول ٢٠١٧ - ٢٠١٨ م  
 لشهادة إتمام الدراسة بمرحلة التعليم الأساسي الإعدادي العام والرسم لغات والخامس بمحافظة البحر الأحمر

( Q<sub>3</sub> )

( a ) Without using the Calculator :

Find the value of  $x$  where  $0 < x < 90$ If  $\tan x = 4 \sin 30^\circ \cos 60^\circ$ ( b ) Prove that the point A ( 1 , - 2 ) , B ( - 1 , 2 ) , C ( 1 , 6 )  
 are the vertices of an isosceles triangle .( Q<sub>4</sub> )( a ) If C ( 6 , - 4 ) is the midpoint of  $\overline{AB}$  where A ( 5 , - 3 ) ,  
 then find the coordinates of a point B .( b ) Prove that the straight line passing two points ( 4 , 5 ) , ( - 3 , - 2 )  
 is parallel to the straight line that makes with the positive direction  
 to the X - axes an angle of  $45^\circ$  " measure " .( Q<sub>5</sub> )( a ) Find the equation of straight line passes the points ( 3 , - 5 )  
 and parallel the straight line  $x + 3y - 7 = 0$ ( b ) Find the equation of the straight line which passes two points  
 ( 1 , 3 ) and ( - 1 , - 3 )